

**MONTGOMERY COUNTY, MARYLAND
WASTE COMPOSITION SAMPLING & ANALYSIS STUDY
2008-2009**



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Waste Composition Sampling & Analysis Study Final Report

Submitted to:



***Department of Environmental Protection
Division of Solid Waste Services***

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1 EXECUTIVE SUMMARY

The waste stream composition for both seasons of the Montgomery County Waste Composition Study was consistent, especially in terms of the top three waste material components (Table 1). However, the organic composition of the waste stream was observed to be about five percent higher during the spring season than in the fall; mainly the result of a higher proportion of food waste (15.2 percent in Fall 2008 compared to 23.9 percent in Spring 2009).

Table 1. Waste Composition by Material Components

Material Components	Aggregate Composition Fall 2008	Aggregate Composition Spring 2009
Organic	35.6%	40.4%
Paper	26.7%	27.3%
Plastic	14.4%	14.5%
Wood Waste	6.8%	3.0%
Inorganic	4.3%	4.7%
Ferrous Metal	3.5%	1.7%
Yard Waste	3.4%	2.7%
Glass	2.2%	2.9%
Hazardous	1.9%	1.7%
Non-Ferrous Metal	1.3%	1.2%

Also indicated in Table 1 is that wood waste comprised a substantially larger composition of the waste stream in the fall than in the spring. One reason for this significant variation in composition is the observation of more wood waste in the non-residential generating sector in the fall (10.2 percent in Fall 2008 compared to 3.5 percent in Spring 2009).

The results of the study also show that the composition of ferrous metal in the waste stream is higher in the fall than in the spring. Contributing to this difference in composition is the larger composition of “other ferrous” metals, which was observed to be 2.8 percent of the waste stream in the fall compared to only 1.1 percent of the waste stream in the spring.

Another difference in the composition of the seasonal waste streams is with respect to glass, which made up of 2.2 percent of the waste stream during the fall study compared to 2.9 percent in the spring. Looking at the aggregate data more closely, it is observed the change is due to a larger composition of brown glass in the spring (1.0 percent) compared to the fall (0.3 percent).

Yard waste comprised a larger proportion of the waste stream in the fall than in the spring. As indicated in Table 1, the mean composition of yard waste is 3.4 percent in the fall compared to 2.7 percent in the spring. The material present in the fall waste stream that contributes to this difference in proportion is leaves. Leaves made up a significant portion of the yard waste category during the fall composition study, while being much less prevalent in the waste for the spring study.

2 METHODS

SCS Engineers conducted a two-season municipal solid waste composition sampling and analysis study in November 2008 and June 2009 for the Montgomery County Division of Solid Waste Services. The study, which was conducted during two 10-day periods during November 10 through 21, 2008 and June 1 through 12, 2009 (excluding Saturday and Sunday) at the Montgomery County Solid Waste Transfer Station and Recycling Center, aimed to provide reliable data on the composition of the waste stream produced by five generating sectors in the County. The goal of the project is to provide the County with data that can be used to help plan reuse, recycling, waste reduction and detoxification programs. This report summarizes the results of the two season study and provides the aggregate data of both seasons proportionally.

For each of the two season studies, SCS utilized a field crew that consisted of a Project Manager who oversaw the project's onsite operations and a Crew Chief that managed the sorting crew. The Project Manager was responsible for selecting the appropriate trucks to sample from the scale house by interviewing the truck drivers. Once a truck was targeted for sampling, it was directed to a segregated area of the transfer station tipping floor where field staff randomly selected the waste sample using a random number table. Once obtained, the waste sample was transported to the Recycling Center for sorting.

The sorting crew consisted of six laborers that hand-sorted a total of 239 samples over the course of the two-season study. Each sample was sorted and weighed separately, with the weight of each component recorded (to at least the nearest 0.1 pound) on a unique field data sheet - one sheet for each sample. Each laborer was responsible for the sorting and cataloging of a particular waste category to maintain consistency and accuracy of the sorting protocol. The waste materials were sorted into 58 different categories in accordance with the County's specifications. The Crew Chief was responsible for the adherence to proper sorting procedures that avoided cross-contamination.

Refuse samples were designated as originating from one of five waste generating sectors. Table 2 below summarizes the number of samples sorted for each of the targeted waste generating sectors in the County for each season.

Table 2. Summary of Samples Sorted by Generating Sector

Waste Generating Sector	Number of Samples Collected & Sorted Fall 2008	Number of Samples Collected & Sorted Spring 2009
Single-Family Subdistrict A	25	25
Single-Family Subdistrict B	26	25
Single-Family Municipal Residential	20	20
Multi-Family	19	20
Non-Residential	29	30
TOTAL PER SEASON	119	120
TOTAL SAMPLES (both seasons)	239	

3 FALL RESULTS

The results from the Fall 2008 season of the waste composition study are presented in the following tables:

- Table 3: Residential Waste Composition – Single-Family Subdistrict A – Fall 2008
- Table 4: Residential Waste Composition – Single-Family Subdistrict B – Fall 2008
- Table 5: Residential Waste Composition – Single-Family Municipal – Fall 2008
- Table 6: Residential Waste Composition - Multi-Family – Fall 2008
- Table 7: Non-Residential Waste Composition – Fall 2008
- Table 8: Aggregate Waste Composition – Fall 2008

Below is a summary of the Fall 2008 waste characterization study results by generating sector.

SINGLE FAMILY SUBDISTRICT A

- Nearly 41 percent of the waste generated from Single-Family Subdistrict A households was organic waste. Of that 41 percent, food waste made up the most significant proportion of the waste stream at a little over 16 percent. Other organic waste subcategories comprising a significant proportion of the organic waste were miscellaneous organic (10.7 percent), diapers and sanitary products (6.1 percent) and clothing/linens/textiles/leather (4.8 percent).
- Paper made up about 26 percent of the waste stream for Subdistrict A. Of that 26 percent, non-recyclable paper made up the largest portion of the waste stream at a little over 11 percent. Significant quantities of other recyclable paper (4.3 percent), newspaper/newsprint catalogs (2.4 percent), and paperboard and magazines – representing about 2 percent each of the waste stream – were also observed.
- Just over 17 percent of the waste stream for Single-Family Subdistrict A comprised of plastics, with other plastic film making up the largest proportion of the materials by weight (7 percent). Other rigid plastics composed a significant portion of the plastic waste (6.3 percent), while plastic film shopping bags and polystyrene each encompassed a little over 1 percent of the waste, respectively.
- Inorganic waste comprised approximately 5.4 percent of the waste stream, mainly from the presence of miscellaneous inorganic and electronic materials.
- Ferrous metals represented 4.7 percent of the waste stream.

SINGLE-FAMILY SUBDISTRICT B

- 42 percent of the waste stream for Single-Family Subdistrict B composed of organic wastes, and most notably food waste, which made up nearly 18 percent of the 42 percent figure. Other significant components of the organic portion of the waste stream in the Fall 2008 study include miscellaneous organics at 9.3 percent, diapers and sanitary products at 5.8 percent and clothing/linens/textiles/leather at 5.4 percent.
- Nearly 24 percent of the waste stream consisted of paper materials. Similar to that of Subdistrict A, non-recyclable paper made up the largest proportion of paper at nearly 10 percent. Interestingly, newspapers/newsprint catalogs made up the exact same proportion of the paper disposed of in Subdistrict B as Subdistrict A. Other recyclable paper comprised of just over 4 percent of the waste stream while magazines made up 2.8 percent and paperboard made up 2.2 percent.
- Other film plastic once again made up the largest proportion of the plastic waste stream for Subdistrict B, at 6.4 percent. Other rigid plastic made up 3.8 percent of the waste stream, while smaller quantities of polystyrene (1.2 percent) and #1 PET bottles (1.2 percent) were observed. The composition of plastic in the Subdistrict B waste stream was 14.9 percent.
- Inorganic waste materials encompassed five percent of Subdistrict B's waste stream mainly from the presence of electronic materials (2.9 percent).
- Yard waste consisted of a significantly larger portion of the waste stream for Subdistrict B than what was observed for Subdistrict A (3.8 percent compared to 1.2 percent). One would expect to see some yard waste in the waste stream due to the fall season in which many households are cleaning up gardens and leaves.

SINGLE-FAMILY MUNICIPAL

- Paralleling Subdistrict A and B waste streams, organic waste materials made up the largest composition of the Single-Family Municipal waste stream. Of the 38.3 percent of the waste stream that included organics, 16.1 percent of it was food waste, while miscellaneous organic waste represented 8.8 percent, clothing/linens/textiles/leather made up five percent compared to diapers and sanitary products that made up 4.3 percent of the waste stream.
- Of the 26.5 percent of the waste stream that comprised paper materials, 9.1 percent was non-recyclable paper compared to 6.2 percent for other recyclable paper, 3.6 percent for magazines and 2.7 percent for newspaper/newsprint catalogs.
- Other plastic film (5.7 percent), other rigid plastics (4.1 percent), and plastic film shopping bags (1.2 percent) encompassed the largest portions of the plastics in the waste stream, which altogether made up 13.2 percent of the waste stream.

- Inorganic materials consisted of 8.9 percent of the waste stream, mainly from the disposal of miscellaneous inorganic waste products (3.7 percent) and electronics materials (3.5 percent).
- Yard waste and wood waste each comprised over three percent of the waste stream. For wood waste this is unique in that for Subdistricts A and B only about two percent of the waste was wood products.

MULTI-FAMILY RESIDENCES

- Similar to the single-family residence generating sectors, the top three components of the waste stream for Multi-Family Residences were 1) Organic Waste, 2) Paper and 3) Plastic.
- However, the organic proportion of the waste stream was not as large as that for the single-family residences – approximately 32 percent compared to between 38 – 42 percent. Of the 32 percent of the waste stream that encompassed organic waste most of it was food waste (12.8 percent) and miscellaneous organics (7.4 percent).
- One significant difference in waste stream composition when comparing multi-family to single-family residential generating sectors is the amount of wood waste present in the multi-family waste stream (over six percent compared to between 1.5 – 3.5 percent).
- In addition, the waste stream for Multi-Family Residences contained nearly 2 percent hazardous waste, mainly from lead-acid batteries.
- Over 4 percent of the waste stream composed glass (mainly clear).
- One would expect to find only a small amount of yard waste in the Multi-Family Residences waste stream, and indeed only about 2 percent consisted of leaves, grass, brush and pruning. This is less than the amount of yard waste in Single-Family Subdistrict B and Single-Family Municipal, but more than what was observed in Single-Family Subdistrict A.

NON-RESIDENTIAL

- Organic waste made up the largest proportion of the Non-Residential waste stream at over 32 percent – nearly the same as that of the Multi-Family Residences, while paper constituted nearly 29 percent of the waste and plastic composed of over 13 percent of the waste stream.
- The composition of paper in the waste stream was the highest of all generating sectors. The largest proportion of the paper category in the Non-Residential waste stream was non-recyclable paper (nearly 10 percent), with significant quantities of corrugated cardboard also being observed (3.6 percent).
- Perhaps the most notable difference in waste composition between the residential generating sectors and the Non-Residential sector is the amount of wood waste observed.

Over 10 percent of the waste from this sector was wood waste in comparison to only two-three percent for the Single-Family generating sectors and six percent for Multi-Family Residences. Much of the wood waste consisted of lumber/pallets (6.4 percent)

- Nearly three percent of the waste stream consisted of hazardous waste, the bulk of which was medical waste (2.6 percent).

AGGREGATE WASTE COMPOSITION

Table 8 summarizes the fall season aggregate waste composition for each of the waste stream components from the generating sectors combined. This composition was derived by combining the waste composition percentages proportionally.

The County provided data (Table 9) on the quantity of waste received annually at the Transfer Station from each generating sector for fiscal year 2008. Based on this data, it is estimated that the composition of the Montgomery County waste stream is as follows: 35.6 percent organic materials, 26.7 percent paper, 14.4 percent plastic, 6.8 percent wood waste, 4.3 percent inorganic waste and 3.4 percent yard waste. Table 8 contains detailed information on the composition of the Montgomery County waste stream for the fall season.

**Table 3. Residential Waste Composition – Single Family
Subdistrict A – Fall 2008**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.4%	1.6%	1.8%	3.0%
2 Corrugated Cardboard	0.9%	1.1%	0.5%	1.4%
3 Magazines	2.3%	1.8%	1.6%	3.0%
4 Paperboard	2.0%	0.8%	1.7%	2.4%
5 Aseptic/Poly-coated	0.6%	0.3%	0.5%	0.7%
6 Office Paper	0.7%	0.7%	0.4%	1.0%
7 Books	1.1%	2.5%	0.1%	2.1%
8 Other Recyclable Paper	4.3%	1.8%	3.6%	5.0%
9 Non-Recyclable Paper	11.1%	3.1%	9.9%	12.4%
Total Paper		25.5%		
PLASTIC				
10 PET #1 Bottles	0.6%	0.4%	0.5%	0.8%
11 HDPE #2 Natural Bottles	0.1%	0.1%	<0.1%	0.1%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.1%	0.3%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.1%	0.4%	0.9%	1.3%
15 Plastic Flower Pots	0.1%	0.5%	<0.1%	0.3%
16 Other Recyclable Containers/Tubs	0.6%	0.5%	0.4%	0.8%
17 Film Plastic - Shopping Bags	1.3%	0.8%	1.0%	1.6%
18 Film Plastic - Other	7.0%	2.5%	6.0%	8.0%
19 Other Rigid Plastic	6.3%	5.6%	4.0%	8.5%
Total Plastic		17.3%		
ORGANIC				
20 Food Waste	16.2%	5.2%	14.1%	18.2%
21 Clothing/Linens/Textiles/Leather	4.8%	4.2%	3.1%	6.4%
22 Carpets/Rugs	1.0%	2.1%	0.2%	1.8%
23 Rubber	0.2%	0.7%	<0.1%	0.5%
24 Tires	<0.1%	0.0%	<0.1%	0.0%
25 Diapers & Sanitary Products	6.1%	3.7%	4.6%	7.5%
26 Fines	1.7%	0.7%	1.5%	2.0%
27 Miscellaneous Organics	10.7%	2.8%	9.6%	11.8%
Total Organic		40.7%		
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	1.2%	3.3%	<0.1%	2.5%
WOOD WASTE				
29 Lumber/Pallets	0.1%	0.5%	<0.1%	0.3%
30 Other Wood	1.8%	2.5%	0.8%	2.7%
Total Wood Waste		1.9%		

TABLE 3: RESIDENTIAL WASTE COMPOSITION - SINGLE FAMILY SUBDISTRICT A - FALL 2008 (continued)

MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

FERROUS METAL

31 Ferrous/Bi-metal Cans	0.6%	0.4%	0.4%	0.8%
32 Other Ferrous	4.1%	6.0%	1.7%	6.4%

Total Ferrous Metal 4.7%

NON-FERROUS METAL

33 Aluminum Cans	0.2%	0.2%	0.1%	0.3%
34 Aluminum Tins/Foil	0.4%	0.4%	0.2%	0.5%
35 Other Aluminum	0.2%	0.5%	<0.1%	0.4%
36 Brass	<0.1%	0.0%	<0.1%	0.0%
37 Copper	<0.1%	0.0%	<0.1%	0.0%
38 Other Non-Ferrous	0.3%	0.9%	<0.1%	0.6%

Total Non-Ferrous Metal 1.1%

GLASS

39 Clear	1.1%	1.0%	0.7%	1.5%
40 Brown	<0.1%	0.2%	<0.1%	0.1%
41 Green	0.5%	0.8%	0.2%	0.9%
42 Non-Container Glass	<0.1%	0.2%	<0.1%	0.2%

Total Glass 1.8%

INORGANIC

43 Concrete/Brick/Rock	<0.1%	0.2%	<0.1%	0.2%
44 Sheet Rock	<0.1%	0.2%	<0.1%	0.1%
45 Latex Paint	0.2%	0.8%	<0.1%	0.5%
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.0%
47 Electronics	2.3%	3.4%	1.0%	3.7%
48 Miscellaneous Inorganic	2.8%	3.1%	1.5%	4.0%

Total Inorganic 5.4%

HAZARDOUS

49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.0%	<0.1%	0.0%
52 Oil-based Paints/Thinners	0.1%	0.4%	<0.1%	0.3%
53 Poisons	<0.1%	0.4%	<0.1%	0.2%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	<0.1%	0.2%	<0.1%	0.2%
56 Fuel/Lubricants/Auto	<0.1%	0.1%	<0.1%	0.0%
57 HW Containers	0.1%	0.4%	<0.1%	0.3%
58 Other Hazardous	0.1%	0.4%	<0.1%	0.3%

Total Hazardous 0.5%

TOTALS

100.0%

Note: Composition based on 25 samples.

**Table 4. Residential Waste Composition – Single Family
Subdistrict B – Fall 2008**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.4%	1.7%	1.8%	3.1%
2 Corrugated Cardboard	1.0%	0.9%	0.7%	1.3%
3 Magazines	2.8%	1.7%	2.1%	3.5%
4 Paperboard	2.2%	1.0%	1.8%	2.6%
5 Aseptic/Poly-coated	0.6%	0.4%	0.4%	0.7%
6 Office Paper	0.9%	1.3%	0.4%	1.4%
7 Books	<0.1%	0.1%	<0.1%	0.0%
8 Other Recyclable Paper	4.1%	3.1%	2.9%	5.3%
9 Non-Recyclable Paper	9.8%	3.8%	8.3%	11.2%
Total Paper	23.8%			
PLASTIC				
10 PET #1 Bottles	1.2%	0.7%	0.9%	1.5%
11 HDPE #2 Natural Bottles	0.4%	0.5%	0.2%	0.5%
12 HDPE #2 Pigmented Bottles	0.3%	0.3%	0.2%	0.4%
13 #3-#7 Plastic Bottles	0.1%	0.2%	<0.1%	0.2%
14 Polystyrene	1.2%	0.5%	1.0%	1.4%
15 Plastic Flower Pots	<0.1%	0.1%	<0.1%	0.0%
16 Other Recyclable Containers/Tubs	0.6%	0.5%	0.4%	0.8%
17 Film Plastic - Shopping Bags	1.0%	0.4%	0.9%	1.2%
18 Film Plastic - Other	6.4%	2.6%	5.4%	7.4%
19 Other Rigid Plastic	3.8%	2.0%	3.0%	4.5%
Total Plastic	14.9%			
ORGANIC				
20 Food Waste	17.5%	6.9%	14.8%	20.2%
21 Clothing/Linens/Textiles/Leather	5.4%	6.9%	2.8%	8.0%
22 Carpets/Rugs	2.3%	7.4%	<0.1%	5.2%
23 Rubber	0.3%	0.5%	<0.1%	0.5%
24 Tires	<0.1%	0.0%	<0.1%	0.0%
25 Diapers & Sanitary Products	5.8%	4.5%	4.0%	7.5%
26 Fines	1.4%	0.5%	1.2%	1.6%
27 Miscellaneous Organics	9.3%	3.1%	8.1%	10.5%
Total Organic	42.0%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.8%	10.9%	<0.1%	8.0%
WOOD WASTE				
29 Lumber/Pallets	<0.1%	10.9%	<0.1%	4.2%
30 Other Wood	2.3%	4.9%	0.4%	4.2%
Total Wood Waste	2.3%			

TABLE 4: RESIDENTIAL WASTE COMPOSITION - SINGLE FAMILY SUBDISTRICT B - FALL 2008 (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.7%	4.9%	<0.1%	2.6%
32 Other Ferrous	2.0%	3.6%	0.6%	3.3%
Total Ferrous Metal	2.7%			
NON-FERROUS METAL				
33 Aluminum Cans	0.3%	0.2%	0.2%	0.3%
34 Aluminum Tins/Foil	0.3%	0.2%	0.2%	0.3%
35 Other Aluminum	0.1%	0.2%	<0.1%	0.2%
36 Brass	<0.1%	0.1%	<0.1%	0.1%
37 Copper	<0.1%	0.0%	<0.1%	0.0%
38 Other Non-Ferrous	1.3%	5.3%	<0.1%	3.3%
Total Non-Ferrous Metal	1.9%			
GLASS				
39 Clear	1.3%	1.1%	0.9%	1.7%
40 Brown	0.4%	0.5%	0.2%	0.5%
41 Green	0.8%	1.2%	0.4%	1.3%
42 Non-Container Glass	<0.1%	0.2%	<0.1%	0.1%
Total Glass	2.5%			
INORGANIC				
43 Concrete/Brick/Rock	0.3%	0.9%	<0.1%	0.7%
44 Sheet Rock	<0.1%	0.5%	<0.1%	0.3%
45 Latex Paint	<0.1%	0.2%	<0.1%	0.1%
46 Fluorescent Lamps	<0.1%	0.1%	<0.1%	0.0%
47 Electronics	2.9%	5.2%	0.9%	4.9%
48 Miscellaneous Inorganic	1.7%	2.6%	0.7%	2.6%
Total Inorganic	5.0%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.3%	<0.1%	0.2%
53 Poisons	<0.1%	0.1%	<0.1%	0.1%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	0.5%	1.6%	<0.1%	1.1%
56 Fuel/Lubricants/Auto	<0.1%	0.0%	<0.1%	0.0%
57 HW Containers	0.4%	1.5%	<0.1%	1.0%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.0%
Total Hazardous	1.1%			
TOTALS	100.0%			

Note: Composition based on 26 samples.

**Table 5. Residential Waste Composition – Single Family
Municipal – Fall 2008**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.7%	1.6%	2.0%	3.4%
2 Corrugated Cardboard	1.0%	1.1%	0.5%	1.5%
3 Magazines	3.6%	2.6%	2.5%	4.7%
4 Paperboard	2.1%	1.1%	1.6%	2.6%
5 Aseptic/Poly-coated	0.8%	0.7%	0.5%	1.1%
6 Office Paper	1.0%	1.5%	0.4%	1.7%
7 Books	<0.1%	0.1%	<0.1%	0.0%
8 Other Recyclable Paper	6.2%	3.6%	4.6%	7.7%
9 Non-Recyclable Paper	9.1%	3.2%	7.7%	10.5%
Total Paper	26.5%			
PLASTIC				
10 PET #1 Bottles	0.6%	0.5%	0.4%	0.8%
11 HDPE #2 Natural Bottles	0.2%	0.2%	<0.1%	0.2%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.1%	0.3%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	0.8%	0.5%	0.6%	1.0%
15 Plastic Flower Pots	<0.1%	0.1%	<0.1%	0.1%
16 Other Recyclable Containers/Tubs	0.4%	0.3%	0.3%	0.5%
17 Film Plastic - Shopping Bags	1.2%	0.9%	0.8%	1.7%
18 Film Plastic - Other	5.7%	1.5%	5.0%	6.4%
19 Other Rigid Plastic	4.1%	1.5%	3.4%	4.8%
Total Plastic	13.2%			
ORGANIC				
20 Food Waste	16.1%	4.4%	14.1%	18.0%
21 Clothing/Linens/Textiles/Leather	5.0%	3.2%	3.6%	6.4%
22 Carpets/Rugs	1.3%	2.9%	<0.1%	2.6%
23 Rubber	0.3%	0.8%	<0.1%	0.7%
24 Tires	<0.1%	0.0%	<0.1%	0.0%
25 Diapers & Sanitary Products	4.3%	4.9%	2.2%	6.5%
26 Fines	2.5%	3.1%	1.1%	3.8%
27 Miscellaneous Organics	8.8%	3.0%	7.5%	10.1%
Total Organic	38.3%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.3%	7.0%	0.2%	6.3%
WOOD WASTE				
29 Lumber/Pallets	<0.1%	0.0%	<0.1%	0.0%
30 Other Wood	3.4%	4.5%	1.4%	5.4%
Total Wood Waste	3.4%			

TABLE 5: RESIDENTIAL WASTE COMPOSITION - SINGLE FAMILY MUNICIPAL - FALL 2008 (continued)

MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

FERROUS METAL

31 Ferrous/Bi-metal Cans	0.6%	0.5%	0.4%	0.8%
32 Other Ferrous	2.6%	2.8%	1.4%	3.8%

Total Ferrous Metal 3.2%

NON-FERROUS METAL

33 Aluminum Cans	0.1%	0.1%	<0.1%	0.2%
34 Aluminum Tins/Foil	0.2%	0.1%	0.2%	0.3%
35 Other Aluminum	0.1%	0.3%	<0.1%	0.3%
36 Brass	<0.1%	0.1%	<0.1%	0.1%
37 Copper	<0.1%	0.4%	<0.1%	0.3%
38 Other Non-Ferrous	0.3%	1.1%	<0.1%	0.8%

Total Non-Ferrous Metal 1.0%

GLASS

39 Clear	0.9%	1.2%	0.4%	1.4%
40 Brown	0.4%	0.9%	<0.1%	0.8%
41 Green	0.5%	0.8%	0.2%	0.9%
42 Non-Container Glass	0.1%	0.5%	<0.1%	0.4%

Total Glass 2.0%

INORGANIC

43 Concrete/Brick/Rock	0.3%	1.2%	<0.1%	0.8%
44 Sheet Rock	1.3%	3.9%	<0.1%	3.0%
45 Latex Paint	<0.1%	0.1%	<0.1%	0.0%
46 Fluorescent Lamps	<0.1%	0.1%	<0.1%	0.1%
47 Electronics	3.5%	4.7%	1.5%	5.6%
48 Miscellaneous Inorganic	3.7%	5.2%	1.5%	6.0%

Total Inorganic 8.9%

HAZARDOUS

49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.2%	<0.1%	0.1%
51 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.0%	<0.1%	0.0%
53 Poisons	<0.1%	0.0%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	<0.1%	0.3%	<0.1%	0.2%
56 Fuel/Lubricants/Auto	<0.1%	0.0%	<0.1%	0.0%
57 HW Containers	<0.1%	0.3%	<0.1%	0.2%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.0%

Total Hazardous 0.3%

TOTALS

100.0%

Note: Composition based on 20 samples.

**Table 6. Residential Waste Composition – Multi-Family –
Fall 2008**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.7%	1.9%	1.9%	3.6%
2 Corrugated Cardboard	2.2%	1.9%	1.3%	3.0%
3 Magazines	2.1%	1.6%	1.4%	2.8%
4 Paperboard	2.5%	1.2%	1.9%	3.0%
5 Aseptic/Poly-coated	0.3%	0.3%	0.2%	0.5%
6 Office Paper	1.2%	1.4%	0.5%	1.8%
7 Books	0.1%	0.3%	<0.1%	0.3%
8 Other Recyclable Paper	3.9%	3.3%	2.4%	5.4%
9 Non-Recyclable Paper	8.4%	4.8%	6.3%	10.6%
Total Paper	23.5%			
PLASTIC				
10 PET #1 Bottles	1.5%	0.7%	1.2%	1.8%
11 HDPE #2 Natural Bottles	0.6%	0.7%	0.3%	0.9%
12 HDPE #2 Pigmented Bottles	0.5%	0.4%	0.3%	0.7%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.2%
14 Polystyrene	0.9%	0.3%	0.8%	1.1%
15 Plastic Flower Pots	<0.1%	0.0%	<0.1%	0.0%
16 Other Recyclable Containers/Tubs	0.8%	1.0%	0.4%	1.3%
17 Film Plastic - Shopping Bags	0.9%	0.5%	0.7%	1.2%
18 Film Plastic - Other	4.7%	2.8%	3.4%	5.9%
19 Other Rigid Plastic	5.8%	5.1%	3.5%	8.1%
Total Plastic	15.8%			
ORGANIC				
20 Food Waste	12.8%	7.1%	9.6%	16.0%
21 Clothing/Linens/Textiles/Leather	4.8%	4.4%	2.8%	6.8%
22 Carpets/Rugs	0.9%	2.4%	<0.1%	1.9%
23 Rubber	<0.1%	0.2%	<0.1%	0.2%
24 Tires	0.1%	0.6%	<0.1%	0.4%
25 Diapers & Sanitary Products	4.1%	3.0%	2.7%	5.4%
26 Fines	1.7%	1.8%	0.9%	2.5%
27 Miscellaneous Organics	7.4%	2.6%	6.2%	8.5%
Total Organic	31.9%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	2.2%	5.2%	<0.1%	4.5%
WOOD WASTE				
29 Lumber/Pallets	1.3%	5.1%	<0.1%	3.6%
30 Other Wood	5.0%	8.3%	1.3%	8.7%
Total Wood Waste	6.3%			

TABLE 6: RESIDENTIAL WASTE COMPOSITION - MULTI-FAMILY - FALL 2008 (continued)

MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

FERROUS METAL					
31 Ferrous/Bi-metal Cans	1.0%	0.6%	0.7%	1.3%	
32 Other Ferrous	3.2%	4.7%	1.1%	5.3%	
Total Ferrous Metal		4.2%			
NON-FERROUS METAL					
33 Aluminum Cans	0.6%	0.5%	0.4%	0.9%	
34 Aluminum Tins/Foil	0.5%	0.7%	0.2%	0.8%	
35 Other Aluminum	<0.1%	0.1%	<0.1%	0.1%	
36 Brass	<0.1%	0.0%	<0.1%	0.0%	
37 Copper	<0.1%	0.0%	<0.1%	0.0%	
38 Other Non-Ferrous	0.5%	1.2%	<0.1%	1.0%	
Total Non-Ferrous Metal		1.7%			
GLASS					
39 Clear	2.1%	1.7%	1.3%	2.8%	
40 Brown	0.8%	1.1%	0.3%	1.3%	
41 Green	0.9%	1.0%	0.5%	1.4%	
42 Non-Container Glass	0.6%	2.7%	<0.1%	1.9%	
Total Glass		4.4%			
INORGANIC					
43 Concrete/Brick/Rock	1.5%	6.4%	<0.1%	4.3%	
44 Sheet Rock	<0.1%	0.3%	<0.1%	0.2%	
45 Latex Paint	<0.1%	0.0%	<0.1%	0.0%	
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.0%	
47 Electronics	4.2%	11.7%	<0.1%	9.5%	
48 Miscellaneous Inorganic	2.9%	5.2%	0.5%	5.2%	
Total Inorganic		8.6%			
HAZARDOUS					
49 Lead-Acid Batteries	0.5%	2.1%	<0.1%	1.4%	
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%	
51 Other Batteries	<0.1%	0.2%	<0.1%	0.2%	
52 Oil-based Paints/Thinners	<0.1%	0.1%	<0.1%	0.1%	
53 Poisons	<0.1%	0.1%	<0.1%	0.1%	
54 Corrosives/Solvents	<0.1%	0.1%	<0.1%	0.0%	
55 Medical	0.2%	0.7%	<0.1%	0.6%	
56 Fuel/Lubricants/Auto	0.00222	1.0%	<0.1%	0.7%	
57 HW Containers	0.2%	0.5%	<0.1%	0.4%	
58 Other Hazardous	0.2%	0.6%	<0.1%	0.4%	
Total Hazardous		1.5%			
TOTALS		100.0%			

Note: Composition based on 19 samples.

Table 7. Non-Residential Waste Composition – Fall 2008

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.7%	4.6%	1.1%	4.4%
2 Corrugated Cardboard	3.6%	3.6%	2.3%	4.9%
3 Magazines	2.1%	2.9%	1.0%	3.1%
4 Paperboard	1.7%	1.1%	1.3%	2.1%
5 Aseptic/Poly-coated	0.2%	0.2%	0.1%	0.3%
6 Office Paper	2.7%	2.3%	1.9%	3.5%
7 Books	0.7%	3.7%	<0.1%	2.1%
8 Other Recyclable Paper	5.3%	4.2%	3.8%	6.8%
9 Non-Recyclable Paper	9.7%	4.5%	8.1%	11.4%
Total Paper	28.6%			
PLASTIC				
10 PET #1 Bottles	1.3%	0.9%	0.9%	1.6%
11 HDPE #2 Natural Bottles	0.3%	0.3%	0.2%	0.4%
12 HDPE #2 Pigmented Bottles	0.1%	0.2%	<0.1%	0.2%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.2%	1.1%	0.9%	1.6%
15 Plastic Flower Pots	<0.1%	0.1%	<0.1%	0.0%
16 Other Recyclable Containers/Tubs	0.8%	1.1%	0.4%	1.2%
17 Film Plastic - Shopping Bags	0.4%	0.5%	0.2%	0.5%
18 Film Plastic - Other	6.0%	2.9%	4.9%	7.0%
19 Other Rigid Plastic	3.3%	2.0%	2.5%	4.0%
Total Plastic	13.4%			
ORGANIC				
20 Food Waste	14.5%	13.6%	9.5%	19.4%
21 Clothing/Linens/Textiles/Leather	3.7%	7.5%	1.0%	6.4%
22 Carpets/Rugs	4.6%	16.5%	<0.1%	10.6%
23 Rubber	0.2%	0.4%	<0.1%	0.3%
24 Tires	1.2%	4.8%	<0.1%	3.0%
25 Diapers & Sanitary Products	0.7%	1.4%	0.2%	1.2%
26 Fines	1.4%	1.2%	1.0%	1.9%
27 Miscellaneous Organics	6.0%	3.2%	4.8%	7.2%
Total Organic	32.2%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.9%	9.1%	0.6%	7.2%
WOOD WASTE				
29 Lumber/Pallets	6.4%	16.0%	0.6%	12.2%
30 Other Wood	3.8%	7.2%	1.2%	6.4%
Total Wood Waste	10.2%			

TABLE 7: NON-RESIDENTIAL WASTE COMPOSITION - FALL 2008 (continued)

MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

FERROUS METAL

31 Ferrous/Bi-metal Cans	0.7%	1.1%	0.3%	1.1%
32 Other Ferrous	2.7%	3.8%	1.3%	4.1%

Total Ferrous Metal 3.4%

NON-FERROUS METAL

33 Aluminum Cans	0.6%	1.2%	0.2%	1.1%
34 Aluminum Tins/Foil	0.2%	0.2%	<0.1%	0.2%
35 Other Aluminum	0.2%	0.6%	<0.1%	0.4%
36 Brass	<0.1%	0.0%	<0.1%	0.0%
37 Copper	<0.1%	0.0%	<0.1%	0.0%
38 Other Non-Ferrous	<0.1%	0.1%	<0.1%	0.1%

Total Non-Ferrous Metal 1.0%

GLASS

39 Clear	0.9%	1.0%	0.5%	1.2%
40 Brown	0.3%	0.7%	<0.1%	0.6%
41 Green	0.6%	1.2%	0.2%	1.1%
42 Non-Container Glass	<0.1%	0.2%	<0.1%	0.2%

Total Glass 1.9%

INORGANIC

43 Concrete/Brick/Rock	0.7%	2.2%	<0.1%	1.5%
44 Sheet Rock	<0.1%	0.3%	<0.1%	0.2%
45 Latex Paint	<0.1%	0.0%	<0.1%	0.0%
46 Fluorescent Lamps	<0.1%	0.1%	<0.1%	0.0%
47 Electronics	1.2%	2.8%	0.2%	2.2%
48 Miscellaneous Inorganic	0.4%	0.9%	0.1%	0.8%

Total Inorganic 2.5%

HAZARDOUS

49 Lead-Acid Batteries	<0.1%	0.1%	<0.1%	0.1%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.0%	<0.1%	0.0%
52 Oil-based Paints/Thinners	<0.1%	0.1%	<0.1%	0.0%
53 Poisons	<0.1%	0.0%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	2.6%	6.0%	0.4%	4.8%
56 Fuel/Lubricants/Auto	0.1%	0.5%	<0.1%	0.3%
57 HW Containers	<0.1%	0.1%	<0.1%	0.1%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.0%

Total Hazardous 2.8%

TOTALS

100.0%

Note: Composition based on 29 samples.

Table 8. Aggregate Waste Composition – Fall 2008

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.6%	3.5%	2.0%	3.2%
2 Corrugated Cardboard	2.4%	2.7%	1.9%	2.9%
3 Magazines	2.3%	2.4%	1.9%	2.8%
4 Paperboard	1.9%	1.1%	1.7%	2.1%
5 Aseptic/Poly-coated	0.4%	0.3%	0.3%	0.4%
6 Office Paper	1.8%	1.9%	1.5%	2.2%
7 Books	0.5%	2.8%	<0.1%	1.0%
8 Other Recyclable Paper	4.9%	3.6%	4.2%	5.5%
9 Non-Recyclable Paper	9.8%	4.2%	9.0%	10.5%
Total Paper	26.7%			
PLASTIC				
10 PET #1 Bottles	1.1%	0.8%	1.0%	1.3%
11 HDPE #2 Natural Bottles	0.3%	0.4%	0.2%	0.4%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.2%	0.3%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.2%	0.8%	1.0%	1.3%
15 Plastic Flower Pots	<0.1%	0.2%	<0.1%	0.1%
16 Other Recyclable Containers/Tubs	0.7%	0.9%	0.5%	0.9%
17 Film Plastic - Shopping Bags	0.7%	0.6%	0.6%	0.8%
18 Film Plastic - Other	6.1%	2.7%	5.6%	6.5%
19 Other Rigid Plastic	4.0%	3.1%	3.5%	4.6%
Total Plastic	14.4%			
ORGANIC				
20 Food Waste	15.2%	10.7%	13.3%	17.2%
21 Clothing/Linens/Textiles/Leather	4.3%	6.6%	3.2%	5.5%
22 Carpets/Rugs	3.1%	12.4%	0.9%	5.4%
23 Rubber	0.2%	0.5%	0.1%	0.3%
24 Tires	0.6%	3.5%	<0.1%	1.3%
25 Diapers & Sanitary Products	2.9%	3.0%	2.4%	3.5%
26 Fines	1.6%	1.3%	1.3%	1.8%
27 Miscellaneous Organics	7.6%	3.1%	7.0%	8.1%
Total Organic	35.6%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.4%	8.6%	1.8%	4.9%
WOOD WASTE				
29 Lumber/Pallets	3.5%	12.6%	1.2%	5.7%
30 Other Wood	3.3%	6.3%	2.2%	4.5%
Total Wood Waste	6.8%			

TABLE 8: AGGREGATE WASTE COMPOSITION - FALL 2008 (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008

WISCONSIN COUNTY WASTE CHARACTERIZATION STUDY - FALL 2000

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.7%	2.3%	0.3%	1.1%
32 Other Ferrous	2.8%	4.2%	2.0%	3.5%
Total Ferrous Metal		3.5%		
NON-FERROUS METAL				
33 Aluminum Cans	0.5%	0.9%	0.3%	0.6%
34 Aluminum Tins/Foil	0.2%	0.3%	0.2%	0.3%
35 Other Aluminum	0.2%	0.5%	<0.1%	0.2%
36 Brass	<0.1%	<0.1%	<0.1%	0.0%
37 Copper	<0.1%	0.1%	<0.1%	0.0%
38 Other Non-Ferrous	0.4%	2.4%	<0.1%	0.8%
Total Non-Ferrous Metal		1.3%		
GLASS				
39 Clear	1.1%	1.1%	0.9%	1.3%
40 Brown	0.3%	0.7%	0.2%	0.5%
41 Green	0.7%	1.1%	0.5%	0.9%
42 Non-Container Glass	0.1%	0.9%	<0.1%	0.3%
Total Glass		2.2%		
INORGANIC				
43 Concrete/Brick/Rock	0.6%	2.5%	0.1%	1.1%
44 Sheet Rock	0.1%	1.0%	<0.1%	0.3%
45 Latex Paint	<0.1%	0.3%	<0.1%	0.1%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	2.1%	5.0%	1.2%	3.0%
48 Miscellaneous Inorganic	1.4%	2.7%	0.9%	1.9%
Total Inorganic		4.3%		
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.6%	<0.1%	0.2%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.2%	<0.1%	0.1%
53 Poisons	<0.1%	0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	1.5%	4.4%	0.7%	2.3%
56 Fuel/Lubricants/Auto	<0.1%	0.5%	<0.1%	0.2%
57 HW Containers	0.1%	0.7%	<0.1%	0.3%
58 Other Hazardous	<0.1%	0.2%	<0.1%	0.1%
Total Hazardous		1.9%		
TOTALS		100.0%		

Note: Composition based on 119 samples.

Table 9. Annual Waste Ratio Data by Generating Sector

Waste Generating Sector	Waste Ratio
Single-Family Subdistrict A	0.1267
Single-Family Subdistrict B	0.1991
Single-Family Municipal Residential	0.0636
Multi-Family	0.0901
Non-Residential	0.5205

4 SPRING RESULTS

The results from the Spring 2009 season of the waste composition study are presented in the following tables:

- Table 10: Residential Waste Composition – Single-Family Subdistrict A – Spring 2009
- Table 11: Residential Waste Composition – Single-Family Subdistrict B – Spring 2009
- Table 12: Residential Waste Composition – Single-Family Municipal – Spring 2009
- Table 13: Residential Waste Composition - Multi-Family – Spring 2009
- Table 14: Non-Residential Waste Composition – Spring 2009
- Table 15: Aggregate Waste Composition – Spring 2009

Below is a summary of the Spring 2009 waste characterization study results by generating sector.

SINGLE FAMILY SUBDISTRICT A

- Nearly 51 percent of the waste composition for Single-Family Subdistrict A households was organic waste. Of that 51 percent, food waste made up the most significant proportion of the waste stream at a little over 28 percent. Other organic waste subcategories comprising a significant proportion of the organic waste were miscellaneous organics (7.5 percent), clothing/linens/textiles/leather (6.6 percent), and diapers and sanitary products (5.9%).
- Paper composed about 23 percent of the waste stream for Subdistrict A. Of that 23 percent, non-recyclable paper made up the largest portion of the waste stream at nearly 10 percent. Significant quantities of other recyclable paper (2.7 percent), newspaper/newsprint catalogs (2.1 percent) and paperboard (2.0 percent) were also observed.
- 13.6 percent of the waste stream for Single-Family Subdistrict A comprised of plastics, with other plastic film making up the largest proportion of the materials by weight (5.6 percent). Other rigid plastics also composed a significant portion of the plastic waste (3.4 percent), while polystyrene comprised of 1.5 percent of the waste, respectively.
- Inorganic waste encompassed approximately 3.8 percent of the waste stream, mainly from miscellaneous inorganic and electronic materials.
- Wood waste represented 3.7 percent of the waste stream.

SINGLE-FAMILY SUBDISTRICT B

- Over 43 percent of the waste stream for Single-Family Subdistrict B composed of organic wastes, and most notably food waste, which made up 25 percent. Other significant

components of the organic portion of the waste stream in the spring 2009 study include miscellaneous organics at 8.1 percent, diapers and sanitary products at 4.7 percent and clothing/linens/textiles/leather at 3.5 percent.

- Nearly 25 percent of the waste stream consisted of paper materials. Non-recyclable paper made up the largest proportion of paper at nearly nine percent. Interestingly, newspapers/newsprint catalogs made up a larger proportion of the paper disposed of in the Subdistrict B generating sector (four percent) when compared to Subdistrict A (2.1 percent). Other recyclable paper made up three percent of the waste stream while paperboard comprised 2.6 percent.
- The proportion of the waste stream of other film plastic for Subdistrict B was nearly identical to that of Subdistrict A (5.5 percent compared to 5.6 percent). Other rigid plastic encompassed 2.4 percent of the waste stream, while smaller quantities of the subcategories polystyrene (1.5 percent) and #1 PET bottles (1.1 percent) were observed. Just over 13 percent of the waste stream for Subdistrict B composed of plastic materials.
- Inorganic waste materials made up 6.1 percent of Subdistrict B's waste stream – nearly half of which was miscellaneous inorganic materials.
- Yard waste consisted of a significantly larger composition of the waste stream for Subdistrict B than what was observed for Subdistrict A (5.9 percent compared to 1.6 percent).

SINGLE-FAMILY MUNICIPAL

- Organic waste materials once again made up the largest composition of the Single-Family Municipal waste stream. Of the 45.5 percent of the waste stream that included organics, nearly 30 percent of it was food waste, while miscellaneous organics represented 6.4 percent. Diapers and sanitary products made up 4.4 percent of the waste stream and clothing/linens/textiles/leather made up 3.8 percent.
- Of the nearly 29 percent of the waste stream that encompassed paper materials, 8.2 percent of it was non-recyclable paper compared to 6.4 percent for newspaper/newsprint catalogues and 3.1 percent for other recyclable paper.
- Plastic materials composed of 12.3 percent of the Single-Family Municipal waste stream. Other plastic film (5.3 percent), other rigid plastic (2.9 percent), polystyrene (1.3 percent) and PET #1 bottles (one percent) made up the largest proportion of the plastics in the waste stream.
- Inorganic materials consisted of 3.6 percent of the waste stream, mainly from the disposal of miscellaneous inorganic materials (two percent) and electronic materials (1.3 percent).
- Both yard waste and glass make up 2.4 percent each of the Single-Family Municipal waste stream composition, respectively.

MULTI-FAMILY RESIDENCES

- Organic waste represented 47.4 percent of the waste stream for Multi-Family Residences. Of that figure, food waste comprised 24 percent. Other subcategories making up a significant portion of the organic waste stream include miscellaneous organics (6.5 percent), carpets/rugs (6.3 percent) and clothing/linens/textiles/leather (5.9 percent).
- The composition of the waste stream that represented paper materials is 22.2 percent – mainly non-recyclable paper (6.5 percent), newspaper/newsprint catalogs (3.4 percent), corrugated cardboard (three percent) and office paper (2.6 percent).
- Plastic materials consisted of 11.7 percent of the Multi-Family Residences waste stream. The largest proportion of that figure consisted of 3.9 percent for other film plastic and three percent for other rigid plastic.
- The composition of inorganic materials in the Multi-Family Residences waste stream was observed to be higher than for the other single family generating sectors, composing of just over seven percent of the waste stream. The largest proportion of that figure is 3.3 percent for electronic materials and three percent for miscellaneous inorganic materials.
- Glass also represented a larger composition of the Multi-Family Residences waste stream than for the other single-family residences at four percent.

NON-RESIDENTIAL

- Organic waste made up the largest composition of the Non-Residential waste stream much like for the residential waste generating sectors – although not as substantial -- at 35 percent. Food waste represented the largest proportion at nearly 22 percent.
- Paper comprised the second largest proportion of the Non-Residential waste stream at just over 30 percent while plastic materials composed 16 percent.
- Inorganic materials represented four percent of waste stream, mainly due to miscellaneous inorganic which made up 2.3 percent and electronic materials which made up 1.4 percent.
- Other categories of waste materials observed to be in the waste stream include wood waste (3.5 percent), glass (3.2 percent) and hazardous (2.9 percent).

AGGREGATE WASTE COMPOSITION

Table 15 summarizes the spring 2009 aggregate waste composition for each of the waste stream categories and subcategories from the generating sectors combined. This composition was derived by combining the waste composition percentages proportionally.

The County provided waste ratio data (Table 9) based on the quantity of waste received annually at the Transfer Station from each generating sector for fiscal year 2008. Based on this data, it is estimated that the composition of the Montgomery County waste stream for the spring season is

as follows: 40.4 percent organic materials, 27.3 percent paper, 14.5 percent plastic, 4.7 percent inorganic materials, three percent wood waste, 2.9 percent glass, 2.7 percent yard waste, 1.7 percent each for ferrous metals and hazardous waste and 1.2 percent for non-ferrous materials.

**Table 10. Residential Waste Composition – Single Family
Subdistrict A – Spring 2009**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.1%	1.2%	1.7%	2.6%
2 Corrugated Cardboard	1.4%	1.5%	0.8%	2.0%
3 Magazines	1.7%	1.5%	1.1%	2.3%
4 Paperboard	2.0%	1.2%	1.5%	2.5%
5 Aseptic/Poly-coated	0.6%	0.8%	0.3%	0.9%
6 Office Paper	1.5%	1.4%	0.9%	2.0%
7 Books	0.9%	3.3%	<0.1%	2.2%
8 Other Recyclable Paper	2.7%	1.4%	2.2%	3.3%
9 Non-Recyclable Paper	9.9%	3.3%	8.6%	11.2%
Total Paper	22.8%			
PLASTIC				
10 PET #1 Bottles	1.0%	0.8%	0.6%	1.3%
11 HDPE #2 Natural Bottles	0.2%	0.5%	<0.1%	0.5%
12 HDPE #2 Pigmented Bottles	0.5%	0.9%	0.1%	0.8%
13 #3-#7 Plastic Bottles	<0.1%	0.0%	<0.1%	0.0%
14 Polystyrene	1.5%	1.0%	1.1%	1.8%
15 Plastic Flower Pots	0.1%	0.2%	<0.1%	0.2%
16 Other Recyclable Containers/Tubs	0.5%	0.8%	0.2%	0.8%
17 Film Plastic - Shopping Bags	0.8%	0.6%	0.6%	1.1%
18 Film Plastic - Other	5.6%	1.8%	4.9%	6.3%
19 Other Rigid Plastic	3.4%	2.5%	2.4%	4.4%
Total Plastic	13.6%			
ORGANIC				
20 Food Waste	28.2%	7.5%	25.3%	31.2%
21 Clothing/Linens/Textiles/Leather	6.6%	5.2%	4.5%	8.6%
22 Carpets/Rugs	1.8%	4.3%	0.1%	3.5%
23 Rubber	<0.1%	0.1%	<0.1%	0.1%
24 Tires	<0.1%	0.0%	<0.1%	0.0%
25 Diapers & Sanitary Products	5.9%	5.3%	3.8%	7.9%
26 Fines	0.8%	0.5%	0.6%	1.0%
27 Miscellaneous Organics	7.5%	2.8%	6.4%	8.6%
Total Organic	50.8%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	1.6%	2.3%	0.7%	2.5%
WOOD WASTE				
29 Lumber/Pallets	2.4%	6.6%	<0.1%	5.0%
30 Other Wood	1.3%	2.8%	0.2%	2.4%
Total Wood Waste	3.7%			

TABLE 10: RESIDENTIAL WASTE COMPOSITION - SINGLE-FAMILY SUBDISTRICT A - SPRING 2009 (continued)
AGGREGATE WASTE COMPOSITION – ALL SAMPLES

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.2%	0.3%	0.1%	0.3%
32 Other Ferrous	0.7%	0.8%	0.4%	1.0%
Total Ferrous Metal		1.0%		
NON-FERROUS METAL				
33 Aluminum Cans	0.5%	0.7%	0.2%	0.7%
34 Aluminum Tins/Foil	0.4%	0.6%	0.2%	0.7%
35 Other Aluminum	<0.1%	0.1%	<0.1%	0.1%
36 Brass	<0.1%	0.1%	<0.1%	0.1%
37 Copper	<0.1%	0.0%	<0.1%	0.0%
38 Other Non-Ferrous	<0.1%	0.3%	<0.1%	0.2%
Total Non-Ferrous Metal		1.1%		
GLASS				
39 Clear	0.8%	0.9%	0.5%	1.2%
40 Brown	<0.1%	0.2%	<0.1%	0.1%
41 Green	0.4%	0.8%	0.1%	0.7%
42 Non-Container Glass	0.2%	0.4%	<0.1%	0.4%
Total Glass		1.6%		
INORGANIC				
43 Concrete/Brick/Rock	0.1%	0.4%	<0.1%	0.3%
44 Sheet Rock	<0.1%	0.3%	<0.1%	0.2%
45 Latex Paint	0.3%	1.2%	<0.1%	0.8%
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.0%
47 Electronics	0.8%	2.4%	<0.1%	1.8%
48 Miscellaneous Inorganic	2.5%	3.8%	1.0%	4.0%
Total Inorganic		3.8%		
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.0%	<0.1%	0.0%
53 Poisons	<0.1%	0.0%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	<0.1%	0.2%	<0.1%	0.1%
56 Fuel/Lubricants/Auto	<0.1%	0.1%	<0.1%	0.1%
57 HW Containers	<0.1%	0.0%	<0.1%	0.0%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.0%
Total Hazardous		0.1%		
TOTALS		100.0%		

Note: Composition based on 25 samples.

**Table 11. Residential Waste Composition – Single Family
Subdistrict B – Spring 2009**

Material Components	Mean Composition	Standard Deviation	95 % Confiden ce Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	4.0%	2.5%	3.0%	5.0%
2 Corrugated Cardboard	1.4%	1.3%	0.9%	1.9%
3 Magazines	1.9%	1.3%	1.4%	2.4%
4 Paperboard	2.6%	0.9%	2.3%	2.9%
5 Aseptic/Poly-coated	0.4%	0.5%	0.2%	0.6%
6 Office Paper	2.1%	2.5%	1.1%	3.1%
7 Books	0.6%	1.3%	<0.1%	1.1%
8 Other Recyclable Paper	3.0%	2.3%	2.1%	3.9%
9 Non-Recyclable Paper	8.9%	3.1%	7.7%	10.1%
Total Paper		24.9%		
PLASTIC				
10 PET #1 Bottles	1.1%	0.7%	0.8%	1.4%
11 HDPE #2 Natural Bottles	0.2%	0.2%	<0.1%	0.2%
12 HDPE #2 Pigmented Bottles	0.4%	0.3%	0.3%	0.5%
13 #3-#7 Plastic Bottles	<0.1%	0.1%	<0.1%	0.1%
14 Polystyrene	1.5%	0.9%	1.1%	1.8%
15 Plastic Flower Pots	0.1%	0.3%	<0.1%	0.2%
16 Other Recyclable Containers/Tubs	0.9%	1.1%	0.5%	1.3%
17 Film Plastic - Shopping Bags	0.9%	0.6%	0.6%	1.1%
18 Film Plastic - Other	5.5%	2.3%	4.6%	6.5%
19 Other Rigid Plastic	2.4%	2.0%	1.7%	3.2%
Total Plastic		13.1%		
ORGANIC				
20 Food Waste	25.0%	12.0%	20.3%	29.7%
21 Clothing/Linens/Textiles/Leather	3.5%	2.8%	2.4%	4.6%
22 Carpets/Rugs	0.6%	1.6%	<0.1%	1.3%
23 Rubber	<0.1%	0.0%	<0.1%	0.0%
24 Tires	0.3%	1.0%	<0.1%	0.7%
25 Diapers & Sanitary Products	4.7%	3.5%	3.3%	6.0%
26 Fines	0.9%	0.8%	0.6%	1.3%
27 Miscellaneous Organics	8.1%	3.6%	6.7%	9.5%
Total Organic		43.1%		
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	5.9%	7.2%	3.1%	8.7%
WOOD WASTE				
29 Lumber/Pallets	<0.1%	0.2%	<0.1%	0.1%
30 Other Wood	1.5%	2.9%	0.4%	2.6%
Total Wood Waste		1.5%		

TABLE 11: RESIDENTIAL WASTE COMPOSITION - SINGLE-FAMILY SUBDISTRICT B - SPRING 2009
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.5%	0.6%	0.2%	0.7%
32 Other Ferrous	0.7%	0.6%	0.4%	0.9%
Total Ferrous Metal	1.1%			
NON-FERROUS METAL				
33 Aluminum Cans	0.3%	0.2%	0.2%	0.4%
34 Aluminum Tins/Foil	0.2%	0.2%	0.2%	0.3%
35 Other Aluminum	<0.1%	0.1%	<0.1%	0.1%
36 Brass	<0.1%	0.0%	<0.1%	0.0%
37 Copper	<0.1%	0.3%	<0.1%	0.2%
38 Other Non-Ferrous	0.2%	0.4%	<0.1%	0.4%
Total Non-Ferrous Metal	0.9%			
GLASS				
39 Clear	1.3%	1.2%	0.8%	1.8%
40 Brown	0.5%	0.9%	0.1%	0.8%
41 Green	0.7%	1.1%	0.3%	1.2%
42 Non-Container Glass	<0.1%	0.2%	<0.1%	0.2%
Total Glass	2.6%			
INORGANIC				
43 Concrete/Brick/Rock	0.2%	0.5%	<0.1%	0.4%
44 Sheet Rock	1.7%	8.1%	<0.1%	4.9%
45 Latex Paint	<0.1%	0.3%	<0.1%	0.2%
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.0%
47 Electronics	1.3%	2.8%	0.2%	2.4%
48 Miscellaneous Inorganic	2.8%	5.1%	0.8%	4.9%
Total Inorganic	6.1%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.0%	<0.1%	0.0%
53 Poisons	<0.1%	0.0%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.0%
55 Medical	0.6%	1.6%	<0.1%	1.2%
56 Fuel/Lubricants/Auto	<0.1%	0.3%	<0.1%	0.2%
57 HW Containers	<0.1%	0.0%	<0.1%	0.0%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.0%
Total Hazardous	0.8%			
TOTALS	100.0%			

Note: Composition based on 25 samples.

**Table 12. Residential Waste Composition – Single Family
Municipal – Spring 2009**

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	6.4%	8.1%	2.87%	9.94%
2 Corrugated Cardboard	2.4%	2.3%	1.36%	3.40%
3 Magazines	2.4%	1.5%	1.77%	3.12%
4 Paperboard	2.5%	1.1%	2.03%	2.99%
5 Aseptic/Poly-coated	0.6%	0.4%	0.46%	0.83%
6 Office Paper	1.8%	1.8%	1.05%	2.60%
7 Books	1.2%	2.1%	0.31%	2.17%
8 Other Recyclable Paper	3.1%	1.7%	2.31%	3.79%
9 Non-Recyclable Paper	8.2%	3.7%	6.59%	9.84%
Total Paper	28.7%			
PLASTIC				
10 PET #1 Bottles	1.0%	0.7%	0.66%	1.32%
11 HDPE #2 Natural Bottles	0.2%	0.2%	<0.1%	0.26%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.10%	0.28%
13 #3-#7 Plastic Bottles	<0.1%	0.0%	<0.1%	0.03%
14 Polystyrene	1.3%	0.9%	0.88%	1.65%
15 Plastic Flower Pots	0.3%	0.9%	<0.1%	0.75%
16 Other Recyclable Containers/Tubs	0.4%	0.5%	0.17%	0.64%
17 Film Plastic - Shopping Bags	0.8%	0.8%	0.45%	1.12%
18 Film Plastic - Other	5.3%	1.6%	4.58%	5.96%
19 Other Rigid Plastic	2.9%	1.5%	2.25%	3.55%
Total Plastic	12.3%			
ORGANIC				
20 Food Waste	29.7%	12.0%	24.42%	34.96%
21 Clothing/Linens/Textiles/Leather	3.8%	2.8%	2.55%	5.00%
22 Carpets/Rugs	0.3%	1.6%	<0.1%	1.02%
23 Rubber	<0.1%	0.0%	<0.1%	0.01%
24 Tires	<0.1%	1.0%	<0.1%	0.44%
25 Diapers & Sanitary Products	4.4%	3.5%	2.88%	5.92%
26 Fines	0.9%	0.8%	0.57%	1.28%
27 Miscellaneous Organics	6.4%	3.6%	4.81%	8.00%
Total Organic	45.5%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	2.4%	2.9%	1.12%	3.68%
WOOD WASTE				
29 Lumber/Pallets	1.1%	2.0%	0.23%	1.97%
30 Other Wood	0.3%	0.7%	<0.1%	0.64%
Total Wood Waste	1.4%			

TABLE 12: RESIDENTIAL WASTE COMPOSITION - SINGLE-FAMILY MUNICIPAL (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.4%	0.6%	0.16%	0.67%
32 Other Ferrous	1.1%	0.6%	0.77%	1.33%
Total Ferrous Metal	1.5%			
NON-FERROUS METAL				
33 Aluminum Cans	0.4%	0.5%	0.24%	0.64%
34 Aluminum Tins/Foil	0.4%	0.5%	0.15%	0.62%
35 Other Aluminum	0.2%	0.3%	<0.1%	0.34%
36 Brass	<0.1%	0.2%	<0.1%	0.12%
37 Copper	0.3%	0.9%	<0.1%	0.71%
38 Other Non-Ferrous	0.4%	0.7%	<0.1%	0.67%
Total Non-Ferrous Metal	1.7%			
GLASS				
39 Clear	1.4%	1.8%	0.59%	2.15%
40 Brown	<0.1%	0.2%	<0.1%	0.17%
41 Green	0.7%	1.8%	<0.1%	1.44%
42 Non-Container Glass	0.3%	0.8%	<0.1%	0.65%
Total Glass	2.4%			
INORGANIC				
43 Concrete/Brick/Rock	<0.1%	0.0%	<0.1%	0.00%
44 Sheet Rock	0.2%	0.6%	<0.1%	0.48%
45 Latex Paint	0.1%	0.3%	<0.1%	0.26%
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.03%
47 Electronics	1.3%	2.2%	0.39%	2.30%
48 Miscellaneous Inorganic	2.0%	3.1%	0.59%	3.31%
Total Inorganic	3.6%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.00%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.03%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.10%
52 Oil-based Paints/Thinners	<0.1%	0.0%	<0.1%	0.00%
53 Poisons	<0.1%	0.0%	<0.1%	0.00%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.00%
55 Medical	0.4%	0.9%	<0.1%	0.76%
56 Fuel/Lubricants/Auto	<0.1%	0.1%	<0.1%	0.04%
57 HW Containers	<0.1%	0.1%	<0.1%	0.07%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.00%
Total Hazardous	0.5%			
TOTALS	100.0%			

Note: Composition based on 20 samples.

Table 13. Residential Waste Composition – Multi-Family-Spring 2009

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	3.4%	2.1%	2.49%	4.35%
2 Corrugated Cardboard	3.0%	3.2%	1.62%	4.44%
3 Magazines	1.6%	1.4%	0.99%	2.21%
4 Paperboard	2.2%	0.9%	1.86%	2.63%
5 Aseptic/Poly-coated	0.4%	0.4%	0.24%	0.56%
6 Office Paper	2.6%	4.3%	0.73%	4.46%
7 Books	0.4%	0.9%	<0.1%	0.79%
8 Other Recyclable Paper	2.1%	2.0%	1.20%	2.92%
9 Non-Recyclable Paper	6.5%	4.7%	4.40%	8.50%
Total Paper	22.2%			
PLASTIC				
10 PET #1 Bottles	1.9%	1.2%	1.34%	2.38%
11 HDPE #2 Natural Bottles	0.4%	0.3%	0.27%	0.56%
12 HDPE #2 Pigmented Bottles	0.6%	0.8%	0.23%	0.96%
13 #3-#7 Plastic Bottles	<0.1%	0.1%	<0.1%	0.05%
14 Polystyrene	0.8%	0.5%	0.59%	1.00%
15 Plastic Flower Pots	<0.1%	0.4%	<0.1%	0.23%
16 Other Recyclable Containers/Tubs	0.4%	0.6%	0.14%	0.70%
17 Film Plastic - Shopping Bags	0.6%	0.4%	0.43%	0.80%
18 Film Plastic - Other	3.9%	2.3%	2.85%	4.89%
19 Other Rigid Plastic	3.0%	3.7%	1.43%	4.66%
Total Plastic	11.7%			
ORGANIC				
20 Food Waste	24.0%	13.7%	18.01%	30.01%
21 Clothing/Linens/Textiles/Leather	5.9%	5.9%	3.35%	8.52%
22 Carpets/Rugs	6.3%	15.5%	<0.1%	13.16%
23 Rubber	<0.1%	0.2%	<0.1%	0.17%
24 Tires	0.2%	1.1%	<0.1%	0.70%
25 Diapers & Sanitary Products	3.5%	3.6%	1.97%	5.11%
26 Fines	0.8%	0.7%	0.51%	1.11%
27 Miscellaneous Organics	6.5%	2.5%	5.38%	7.60%
Total Organic	47.4%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	1.5%	3.9%	<0.1%	3.19%
WOOD WASTE				
29 Lumber/Pallets	3.2%	5.8%	0.62%	5.73%
30 Other Wood	0.2%	0.6%	<0.1%	0.46%
Total Wood Waste	3.4%			

TABLE 13: RESIDENTIAL WASTE COMPOSITION - MULTI-FAMILY - SPRING 2009 (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - SPRING 2009

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.6%	0.6%	0.31%	0.83%
32 Other Ferrous	1.1%	0.6%	0.83%	1.35%
Total Ferrous Metal	1.7%			
NON-FERROUS METAL				
33 Aluminum Cans	0.6%	0.4%	0.40%	0.78%
34 Aluminum Tins/Foil	0.2%	0.2%	0.13%	0.30%
35 Other Aluminum	<0.1%	0.1%	<0.1%	0.09%
36 Brass	<0.1%	0.1%	<0.1%	0.07%
37 Copper	<0.1%	0.0%	<0.1%	0.02%
38 Other Non-Ferrous	0.1%	0.4%	<0.1%	0.29%
Total Non-Ferrous Metal	1.0%			
GLASS				
39 Clear	1.9%	1.2%	1.36%	2.44%
40 Brown	0.9%	1.2%	0.39%	1.44%
41 Green	0.8%	1.3%	0.28%	1.41%
42 Non-Container Glass	0.3%	0.6%	<0.1%	0.57%
Total Glass	4.0%			
INORGANIC				
43 Concrete/Brick/Rock	<0.1%	0.2%	<0.1%	0.11%
44 Sheet Rock	0.7%	3.2%	<0.1%	2.11%
45 Latex Paint	<0.1%	0.2%	<0.1%	0.12%
46 Fluorescent Lamps	<0.1%	0.0%	<0.1%	0.00%
47 Electronics	3.3%	5.2%	1.02%	5.60%
48 Miscellaneous Inorganic	3.0%	4.1%	1.16%	4.78%
Total Inorganic	7.1%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.00%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.00%
51 Other Batteries	<0.1%	0.0%	<0.1%	0.00%
52 Oil-based Paints/Thinners	<0.1%	0.0%	<0.1%	0.00%
53 Poisons	<0.1%	0.0%	<0.1%	0.00%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.00%
55 Medical	<0.1%	0.4%	<0.1%	0.26%
56 Fuel/Lubricants/Auto	<0.1%	0.0%	<0.1%	0.00%
57 HW Containers	<0.1%	0.0%	<0.1%	0.00%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.00%
Total Hazardous	<0.1%			
TOTALS	100.0%			

Note: Composition based on 20 samples.

Table 14. Non-Residential Waste Composition Spring 2009

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.4%	1.8%	1.78%	3.04%
2 Corrugated Cardboard	4.4%	4.2%	2.89%	5.88%
3 Magazines	1.0%	1.5%	0.50%	1.57%
4 Paperboard	1.8%	1.3%	1.34%	2.30%
5 Aseptic/Poly-coated	0.3%	0.5%	0.11%	0.44%
6 Office Paper	5.4%	5.6%	3.45%	7.44%
7 Books	0.8%	2.3%	<0.1%	1.57%
8 Other Recyclable Paper	2.8%	2.4%	1.95%	3.66%
9 Non-Recyclable Paper	11.1%	4.6%	9.50%	12.76%
Total Paper	30.1%			
PLASTIC				
10 PET #1 Bottles	1.7%	1.4%	1.16%	2.17%
11 HDPE #2 Natural Bottles	0.4%	0.5%	0.24%	0.57%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.13%	0.28%
13 #3-#7 Plastic Bottles	0.1%	0.5%	<0.1%	0.29%
14 Polystyrene	1.6%	1.1%	1.25%	2.02%
15 Plastic Flower Pots	<0.1%	0.2%	<0.1%	0.10%
16 Other Recyclable Containers/Tubs	0.5%	0.6%	0.25%	0.71%
17 Film Plastic - Shopping Bags	0.3%	0.3%	0.22%	0.41%
18 Film Plastic - Other	7.0%	3.0%	5.95%	8.09%
19 Other Rigid Plastic	4.1%	4.1%	2.61%	5.56%
Total Plastic	16.0%			
ORGANIC				
20 Food Waste	21.8%	15.2%	16.34%	27.23%
21 Clothing/Linens/Textiles/Leather	2.2%	3.0%	1.15%	3.29%
22 Carpets/Rugs	2.3%	5.7%	0.27%	4.34%
23 Rubber	0.6%	2.6%	<0.1%	1.51%
24 Tires	<0.1%	0.0%	<0.1%	0.00%
25 Diapers & Sanitary Products	0.9%	2.3%	0.11%	1.73%
26 Fines	1.0%	0.9%	0.70%	1.34%
27 Miscellaneous Organics	6.1%	2.6%	5.23%	7.07%
Total Organic	35.0%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	2.0%	4.3%	0.50%	3.59%
WOOD WASTE				
29 Lumber/Pallets	2.4%	7.0%	<0.1%	4.94%
30 Other Wood	1.0%	2.4%	0.18%	1.92%
Total Wood Waste	3.5%			

TABLE 14: NON-RESIDENTIAL WASTE COMPOSITION - SPRING 2009 (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - SPRING 2009

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.8%	1.7%	0.18%	1.39%
32 Other Ferrous	1.3%	2.5%	0.39%	2.19%
Total Ferrous Metal	2.1%			
NON-FERROUS METAL				
33 Aluminum Cans	0.5%	0.3%	0.37%	0.58%
34 Aluminum Tins/Foil	0.6%	1.1%	0.23%	0.99%
35 Other Aluminum	<0.1%	0.4%	<0.1%	0.25%
36 Brass	<0.1%	0.0%	<0.1%	0.00%
37 Copper	<0.1%	0.0%	<0.1%	0.00%
38 Other Non-Ferrous	0.2%	0.5%	<0.1%	0.34%
Total Non-Ferrous Metal	1.3%			
GLASS				
39 Clear	1.1%	1.2%	0.64%	1.48%
40 Brown	1.6%	5.6%	<0.1%	3.62%
41 Green	0.3%	0.5%	0.10%	0.46%
42 Non-Container Glass	0.2%	0.8%	<0.1%	0.50%
Total Glass	3.2%			
INORGANIC				
43 Concrete/Brick/Rock	0.1%	2.2%	<0.1%	0.92%
44 Sheet Rock	0.1%	0.3%	<0.1%	0.23%
45 Latex Paint	0.1%	0.0%	<0.1%	0.11%
46 Fluorescent Lamps	<0.1%	0.1%	<0.1%	0.02%
47 Electronics	1.4%	2.8%	0.44%	2.42%
48 Miscellaneous Inorganic	2.3%	0.9%	1.93%	2.58%
Total Inorganic	4.0%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.0%	<0.1%	0.00%
50 Other Rechargeable Batteries	<0.1%	0.0%	<0.1%	0.00%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.05%
52 Oil-based Paints/Thinners	<0.1%	0.3%	<0.1%	0.15%
53 Poisons	<0.1%	0.0%	<0.1%	0.00%
54 Corrosives/Solvents	<0.1%	0.0%	<0.1%	0.00%
55 Medical	2.7%	6.0%	0.61%	4.89%
56 Fuel/Lubricants/Auto	<0.1%	0.1%	<0.1%	0.08%
57 HW Containers	<0.1%	0.0%	<0.1%	0.01%
58 Other Hazardous	<0.1%	0.0%	<0.1%	0.00%
Total Hazardous	2.9%			
TOTALS	100.0%			

Note: Composition based on 30 samples.

Table 15. Aggregate Waste Composition Spring 2009

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	3.0%	2.8%	2.5%	3.5%
2 Corrugated Cardboard	3.2%	3.3%	2.6%	3.8%
3 Magazines	1.4%	1.5%	1.2%	1.7%
4 Paperboard	2.1%	1.2%	1.9%	2.3%
5 Aseptic/Poly-coated	0.4%	0.5%	0.3%	0.5%
6 Office Paper	3.8%	4.4%	3.0%	4.6%
7 Books	0.7%	2.2%	0.3%	1.1%
8 Other Recyclable Paper	2.8%	2.2%	2.4%	3.2%
9 Non-Recyclable Paper	9.9%	4.1%	9.2%	10.7%
Total Paper	27.3%			
PLASTIC				
10 PET #1 Bottles	1.4%	1.2%	1.2%	1.6%
11 HDPE #2 Natural Bottles	0.3%	0.4%	0.2%	0.4%
12 HDPE #2 Pigmented Bottles	0.3%	0.5%	0.2%	0.4%
13 #3-#7 Plastic Bottles	<0.1%	0.4%	<0.1%	0.1%
14 Polystyrene	1.5%	1.0%	1.3%	1.7%
15 Plastic Flower Pots	<0.1%	0.3%	<0.1%	0.1%
16 Other Recyclable Containers/Tubs	0.6%	0.8%	0.4%	0.7%
17 Film Plastic - Shopping Bags	0.6%	0.5%	0.5%	0.6%
18 Film Plastic - Other	6.2%	2.6%	5.7%	6.6%
19 Other Rigid Plastic	3.5%	3.4%	2.9%	4.1%
Total Plastic	14.5%			
ORGANIC				
20 Food Waste	23.9%	13.5%	21.5%	26.4%
21 Clothing/Linens/Textiles/Leather	3.5%	3.6%	2.8%	4.1%
22 Carpets/Rugs	2.1%	6.5%	1.0%	3.3%
23 Rubber	0.3%	1.9%	<0.1%	0.6%
24 Tires	<0.1%	0.6%	<0.1%	0.2%
25 Diapers & Sanitary Products	2.8%	3.2%	2.2%	3.3%
26 Fines	0.9%	0.8%	0.8%	1.1%
27 Miscellaneous Organics	6.8%	2.9%	6.2%	7.3%
Total Organic	40.4%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	2.7%	4.7%	1.9%	3.6%
WOOD WASTE				
29 Lumber/Pallets	1.9%	5.9%	0.9%	3.0%
30 Other Wood	1.0%	2.4%	0.6%	1.5%
Total Wood Waste	3.0%			

TABLE 15: AGGREGATE WASTE COMPOSITION – SPRING 2009 (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.6%	1.3%	0.4%	0.8%
32 Other Ferrous	1.1%	1.9%	0.7%	1.4%
Total Ferrous Metal	1.7%			
NON-FERROUS METAL				
33 Aluminum Cans	0.4%	0.4%	0.4%	0.5%
34 Aluminum Tins/Foil	0.5%	0.8%	0.3%	0.6%
35 Other Aluminum	<0.1%	0.3%	<0.1%	0.1%
36 Brass	<0.1%	<0.1%	<0.1%	0.0%
37 Copper	<0.1%	0.3%	<0.1%	0.1%
38 Other Non-Ferrous	0.2%	0.5%	<0.1%	0.3%
Total Non-Ferrous Metal	1.2%			
GLASS				
39 Clear	1.2%	1.2%	1.0%	1.4%
40 Brown	1.0%	4.1%	0.3%	1.8%
41 Green	0.5%	0.9%	0.3%	0.6%
42 Non-Container Glass	0.2%	0.7%	<0.1%	0.3%
Total Glass	2.9%			
INORGANIC				
43 Concrete/Brick/Rock	0.1%	1.6%	<0.1%	0.4%
44 Sheet Rock	0.5%	3.8%	<0.1%	1.2%
45 Latex Paint	0.1%	0.4%	<0.1%	0.2%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	1.5%	3.0%	1.0%	2.0%
48 Miscellaneous Inorganic	2.4%	3.1%	1.9%	3.0%
Total Inorganic	4.7%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	<0.1%	<0.1%	0.0%
52 Oil-based Paints/Thinners	<0.1%	0.2%	<0.1%	0.1%
53 Poisons	<0.1%	<0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	1.6%	4.4%	0.8%	2.4%
56 Fuel/Lubricants/Auto	<0.1%	0.2%	<0.1%	0.1%
57 HW Containers	<0.1%	<0.1%	<0.1%	0.0%
58 Other Hazardous	<0.1%	<0.1%	<0.1%	0.0%
Total Hazardous	1.7%			
TOTALS	100.0%			

Note: Composition based on 120 samples.

5 ANNUAL RESULTS

Based on the aggregated waste composition data of the two study seasons the following conclusions can be drawn:

- The largest material category of Montgomery County's municipal solid waste stream is organic materials (38 percent). Of organic materials, food waste comprised the most significant portion at nearly 20 percent. Other subcategories of organic waste were miscellaneous organics (7.2 percent), clothing/linens/textiles/leather (3.9 percent), diapers and sanitary products (2.8 percent) and carpets/rugs (2.6 percent).
- Paper comprised 27 percent of the waste stream – representing the second largest component of the waste stream. Non-recyclable paper comprised the largest portion of the paper at 9.8 percent. Other subcategories of paper were other recyclable paper (3.8 percent), newspaper/newsprint catalogs (2.8 percent), office paper (2.8 percent), and corrugated cardboard (2.8 percent).
- Just over 14 percent of the waste stream is plastic materials. Film plastic comprised the most significant portion of plastic at 6.1 percent. Other subcategories of plastic were other rigid plastic (3.8 percent), PET #1 bottles (1.3 percent) and polystyrene (1.3 percent).
- Wood waste makes up nearly five percent of the waste stream and is comprised of lumber/pallets (2.7 percent) and other wood (2.2 percent).
- Inorganic materials comprise 4.5 percent of the waste stream, the bulk of which is miscellaneous inorganic materials (1.9 percent) and electronics (1.8 percent).
- Yard waste makes up 3.0 percent of the waste stream while ferrous metal and glass each make up 2.6 percent, respectively.
- Hazardous waste comprised 1.8 percent of the waste stream, with a significant portion of that waste stream being medical waste (1.5 percent).
- Just over one percent of Montgomery County's waste composition consists of non-ferrous metal materials, mainly aluminum cans (0.5 percent), aluminum tins/foil (0.4 percent) and other non-ferrous (0.3 percent).

Table 16 provides a total summary of the aggregated waste composition for fall and spring studies combined. Tables 17-21 provide the annual weighted waste composition by generating sector respectively.

Table 16. Aggregate Waste Composition – Total

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.8%	6.6%	2.0%	3.7%
2 Corrugated Cardboard	2.8%	6.9%	1.9%	3.7%
3 Magazines	1.9%	6.7%	1.0%	2.7%
4 Paperboard	2.0%	5.7%	1.3%	2.7%
5 Aseptic/Poly-coated	0.4%	4.6%	<0.1%	1.0%
6 Office Paper	2.8%	6.5%	2.0%	3.6%
7 Books	0.6%	9.6%	<0.1%	1.8%
8 Other Recyclable Paper	3.8%	7.0%	2.9%	4.7%
9 Non-Recyclable Paper	9.8%	10.2%	8.5%	11.1%
Total Paper	27.0%			
PLASTIC				
10 PET #1 Bottles	1.3%	4.7%	0.7%	1.9%
11 HDPE #2 Natural Bottles	0.3%	3.8%	<0.1%	0.8%
12 HDPE #2 Pigmented Bottles	0.3%	4.8%	<0.1%	0.9%
13 #3-#7 Plastic Bottles	<0.1%	0.9%	<0.1%	0.2%
14 Polystyrene	1.3%	5.1%	0.7%	2.0%
15 Plastic Flower Pots	<0.1%	2.1%	<0.1%	0.3%
16 Other Recyclable Containers/Tubs	0.6%	4.5%	<0.1%	1.2%
17 Film Plastic - Shopping Bags	0.6%	4.0%	0.1%	1.1%
18 Film Plastic - Other	6.1%	7.4%	5.2%	7.0%
19 Other Rigid Plastic	3.8%	8.7%	2.7%	4.9%
Total Plastic	14.4%			
ORGANIC				
20 Food Waste	19.6%	18.9%	17.2%	22.0%
21 Clothing/Linens/Textiles/Leather	3.9%	13.3%	2.2%	5.6%
22 Carpets/Rugs	2.6%	16.5%	0.6%	4.7%
23 Rubber	0.3%	1.7%	<0.1%	0.5%
24 Tires	0.4%	3.5%	<0.1%	0.8%
25 Diapers & Sanitary Products	2.8%	12.0%	1.3%	4.4%
26 Fines	1.3%	3.9%	0.8%	1.7%
27 Miscellaneous Organics	7.2%	9.1%	6.0%	8.3%
Total Organic	38.0%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.0%	11.6%	1.6%	4.5%
WOOD WASTE				
29 Lumber/Pallets	2.7%	18.3%	0.4%	5.0%
30 Other Wood	2.2%	10.5%	0.9%	3.5%
Total Wood Waste	4.9%			

TABLE 16: AGGREGATE WASTE COMPOSITION - TOTAL (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.7%	3.5%	0.2%	1.1%
32 Other Ferrous	1.9%	6.2%	1.1%	2.7%
Total Ferrous Metal	2.6%			
NON-FERROUS METAL				
33 Aluminum Cans	0.5%	4.3%	<0.1%	1.0%
34 Aluminum Tins/Foil	0.4%	3.9%	<0.1%	0.9%
35 Other Aluminum	0.1%	1.5%	<0.1%	0.3%
36 Brass	<0.1%	1.6%	<0.1%	0.2%
37 Copper	<0.1%	0.1%	<0.1%	0.0%
38 Other Non-Ferrous	0.3%	3.7%	<0.1%	0.7%
Total Non-Ferrous Metal	1.2%			
GLASS				
39 Clear	1.1%	4.8%	0.5%	1.7%
40 Brown	0.7%	2.4%	0.4%	1.0%
41 Green	0.6%	4.5%	<0.1%	1.1%
42 Non-Container Glass	0.2%	3.3%	<0.1%	0.6%
Total Glass	2.6%			
INORGANIC				
43 Concrete/Brick/Rock	0.4%	4.2%	<0.1%	0.9%
44 Sheet Rock	0.3%	2.9%	<0.1%	0.7%
45 Latex Paint	<0.1%	5.5%	<0.1%	0.8%
46 Fluorescent Lamps	<0.1%	0.7%	<0.1%	0.1%
47 Electronics	1.8%	9.3%	0.6%	3.0%
48 Miscellaneous Inorganic	1.9%	10.2%	0.6%	3.2%
Total Inorganic	4.5%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.6%	<0.1%	0.1%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	1.8%	<0.1%	0.3%
52 Oil-based Paints/Thinners	<0.1%	0.2%	<0.1%	0.1%
53 Poisons	<0.1%	0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	1.5%	5.1%	0.9%	2.2%
56 Fuel/Lubricants/Auto	<0.1%	1.8%	<0.1%	0.3%
57 HW Containers	<0.1%	0.7%	<0.1%	0.2%
58 Other Hazardous	<0.1%	0.2%	<0.1%	0.0%
Total Hazardous	1.8%			
TOTALS	100.0%			

Note: Composition based on 239 samples.

Table 17. Annual Weighted Waste Composition – Single Family Subdistrict A

Material Components	Mean Compos ition	Standard Deviation	95% Confidence Lim its	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.3%	2.0%	1.7%	2.8%
2 Corrugated Cardboard	1.2%	1.9%	0.7%	1.7%
3 Magazines	2.0%	2.4%	1.4%	2.7%
4 Paperboard	2.0%	1.5%	1.6%	2.4%
5 Aseptic/Poly-coated	0.6%	0.9%	0.4%	0.8%
6 Office Paper	1.1%	1.6%	0.6%	1.5%
7 Books	1.0%	4.2%	<0.1%	2.1%
8 Other Recyclable Paper	3.5%	2.3%	2.9%	4.1%
9 Non-Recyclable Paper	10.5%	4.5%	9.2%	11.8%
Total Paper	24.1 %			
PLASTIC				
10 PET #1 Bottles	0.8%	0.9%	0.5%	1.0%
11 HDPE #2 Natural Bottles	0.2%	0.6%	<0.1%	0.3%
12 HDPE #2 Pigmented Bottles	0.3%	0.9%	<0.1%	0.6%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.3%	1.1%	1.0%	1.6%
15 Plastic Flower Pots	0.1%	0.5%	<0.1%	0.3%
16 Other Recyclable Containers/Tubs	0.5%	0.9%	0.3%	0.8%
17 Film Plastic - Shopping Bags	1.1%	1.0%	0.8%	1.3%
18 Film Plastic - Other	6.3%	3.1%	5.4%	7.1%
19 Other Rigid Plastic	4.8%	6.2%	3.1%	6.5%
Total Plastic	15.4 %			
ORGANIC				
20 Food Waste	22.2%	9.1%	19.7%	24.7%
21 Clothing/Linens/Textiles/Leather	5.7%	6.7%	3.8%	7.5%
22 Carpets/Rugs	1.4%	4.7%	<0.1%	2.7%
23 Rubber	0.1%	0.7%	<0.1%	0.3%
24 Tires	<0.1%	<0.1%	<0.1%	0.0%
25 Diapers & Sanitary Products	6.0%	6.4%	4.2%	7.8%
26 Fines	1.2%	0.8%	1.0%	1.5%
27 Miscellaneous Organics	9.1%	3.9%	8.0%	10.2%
Total Organic	45.7 %			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	1.4%	4.0%	0.3%	2.5%
WOOD WASTE				
29 Lumber/Pallets	1.2%	6.6%	<0.1%	3.1%
30 Other Wood	1.5%	3.7%	0.5%	2.6%
Total Wood Waste	2.8 %			

TABLE 17: ANNUAL WEIGHTED WASTE COMPOSITION - SINGLE FAMILY SUBDISTRICT A (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.4%	0.5%	0.3%	0.5%
32 Other Ferrous	2.4%	6.1%	0.7%	4.1%
Total Ferrous Metal	2.8%			
NON-FERROUS METAL				
33 Aluminum Cans	0.3%	0.7%	0.1%	0.5%
34 Aluminum Tins/Foil	0.4%	0.7%	0.2%	0.6%
35 Other Aluminum	0.1%	0.5%	<0.1%	0.3%
36 Brass	<0.1%	0.1%	<0.1%	0.0%
37 Copper	<0.1%	<0.1%	<0.1%	0.0%
38 Other Non-Ferrous	0.2%	0.9%	<0.1%	0.5%
Total Non-Ferrous Metal	1.1%			
GLASS				
39 Clear	1.0%	1.3%	0.6%	1.4%
40 Brown	<0.1%	0.2%	<0.1%	0.1%
41 Green	0.5%	1.1%	0.2%	0.8%
42 Non-Container Glass	0.2%	0.5%	<0.1%	0.3%
Total Glass	1.7%			
INORGANIC				
43 Concrete/Brick/Rock	<0.1%	0.5%	<0.1%	0.2%
44 Sheet Rock	<0.1%	0.3%	<0.1%	0.1%
45 Latex Paint	0.2%	1.4%	<0.1%	0.6%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	1.6%	4.2%	0.4%	2.7%
48 Miscellaneous Inorganic	2.6%	4.9%	1.3%	4.0%
Total Inorganic	4.6%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.1%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.4%	<0.1%	0.2%
53 Poisons	<0.1%	0.4%	<0.1%	0.1%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	<0.1%	0.3%	<0.1%	0.2%
56 Fuel/Lubricants/Auto	<0.1%	0.1%	<0.1%	0.1%
57 HW Containers	<0.1%	0.4%	<0.1%	0.2%
58 Other Hazardous	<0.1%	0.4%	<0.1%	0.2%
Total Hazardous	0.3%			
TOTALS	100.0%			

Note: Composition based on 50 samples.

Table 18. Annual Weighted Waste Composition – Single Family Subdistrict B

Material Components	Mean Compos ition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	3.2%	3.1%	2.4%	4.1%
2 Corrugated Cardboard	1.2%	1.5%	0.8%	1.6%
3 Magazines	2.3%	2.1%	1.8%	2.9%
4 Paperboard	2.4%	1.3%	2.0%	2.7%
5 Aseptic/Poly-coated	0.5%	0.6%	0.3%	0.7%
6 Office Paper	1.5%	2.8%	0.7%	2.3%
7 Books	0.3%	1.3%	<0.1%	0.6%
8 Other Recyclable Paper	3.5%	3.8%	2.5%	4.6%
9 Non-Recyclable Paper	9.3%	4.9%	8.0%	10.7%
Total Paper	24.4%			
PLASTIC				
10 PET #1 Bottles	1.1%	1.1%	0.8%	1.4%
11 HDPE #2 Natural Bottles	0.3%	0.5%	0.1%	0.4%
12 HDPE #2 Pigmented Bottles	0.4%	0.5%	0.2%	0.5%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.3%	1.0%	1.1%	1.6%
15 Plastic Flower Pots	<0.1%	0.3%	<0.1%	0.2%
16 Other Recyclable Containers/Tubs	0.7%	1.2%	0.4%	1.1%
17 Film Plastic - Shopping Bags	1.0%	0.8%	0.8%	1.2%
18 Film Plastic - Other	6.0%	3.5%	5.0%	6.9%
19 Other Rigid Plastic	3.1%	2.9%	2.3%	3.9%
Total Plastic	14.0%			
ORGANIC				
20 Food Waste	21.2%	13.9%	17.4%	25.0%
21 Clothing/Linens/Textiles/Leather	4.5%	7.4%	2.4%	6.5%
22 Carpets/Rugs	1.5%	7.5%	<0.1%	3.6%
23 Rubber	0.1%	0.5%	<0.1%	0.3%
24 Tires	0.1%	1.0%	<0.1%	0.4%
25 Diapers & Sanitary Products	5.2%	5.7%	3.6%	6.8%
26 Fines	1.2%	1.0%	0.9%	1.4%
27 Miscellaneous Organics	8.7%	4.8%	7.4%	10.0%
Total Organic	42.6%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	4.8%	13.1%	1.3%	8.4%
WOOD WASTE				
29 Lumber/Pallets	<0.1%	10.9%	<0.1%	3.0%
30 Other Wood	1.9%	5.7%	0.3%	3.4%
Total Wood Waste	1.9%			

TABLE 18: ANNUAL WEIGHTED WASTE COMPOSITION - SINGLE FAMILY SUBDISTRICT B (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.6%	4.9%	<0.1%	2.0%
32 Other Ferrous	1.3%	3.6%	0.3%	2.3%
Total Ferrous Metal	1.9%			
NON-FERROUS METAL				
33 Aluminum Cans	0.3%	0.3%	0.2%	0.4%
34 Aluminum Tins/Foil	0.3%	0.3%	0.2%	0.3%
35 Other Aluminum	<0.1%	0.2%	<0.1%	0.1%
36 Brass	<0.1%	0.1%	<0.1%	0.1%
37 Copper	<0.1%	0.3%	<0.1%	0.1%
38 Other Non-Ferrous	0.7%	5.3%	<0.1%	2.2%
Total Non-Ferrous Metal	1.4%			
GLASS				
39 Clear	1.3%	1.6%	0.8%	1.7%
40 Brown	0.4%	1.0%	0.1%	0.7%
41 Green	0.8%	1.6%	0.3%	1.2%
42 Non-Container Glass	<0.1%	0.2%	<0.1%	0.1%
Total Glass	2.6%			
INORGANIC				
43 Concrete/Brick/Rock	0.3%	1.1%	<0.1%	0.6%
44 Sheet Rock	0.9%	8.1%	<0.1%	3.1%
45 Latex Paint	<0.1%	0.4%	<0.1%	0.1%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	2.1%	5.9%	0.5%	3.7%
48 Miscellaneous Inorganic	2.3%	5.7%	0.7%	3.8%
Total Inorganic	5.6%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	0.3%	<0.1%	0.1%
53 Poisons	<0.1%	<0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	0.5%	2.2%	<0.1%	1.2%
56 Fuel/Lubricants/Auto	<0.1%	0.3%	<0.1%	0.1%
57 HW Containers	0.2%	1.5%	<0.1%	0.6%
58 Other Hazardous	<0.1%	<0.1%	<0.1%	0.0%
Total Hazardous	0.9%			
TOTALS	100.0%			

Note: Composition based on 51 samples.

Table 19. Annual Weighted Waste Composition – Single Family Municipal

Material Components	Mean Compos ition	Stand ard Deviation	95 % Con fiden ce Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	4.5%	2.2%	3.8%	5.2%
2 Corrugated Cardboard	1.7%	1.2%	1.3%	2.1%
3 Magazines	3.0%	2.6%	2.2%	3.8%
4 Paperboard	2.3%	1.1%	1.9%	2.7%
5 Aseptic/Poly-coated	0.7%	0.7%	0.5%	0.9%
6 Office Paper	1.4%	1.6%	0.9%	1.9%
7 Books	0.6%	0.1%	0.6%	0.7%
8 Other Recyclable Paper	4.6%	3.6%	3.5%	5.7%
9 Non-Recyclable Paper	8.7%	3.3%	7.6%	9.7%
Total Paper	27.6%			
PLASTIC				
10 PET #1 Bottles	0.8%	0.5%	0.7%	0.9%
11 HDPE #2 Natural Bottles	0.2%	0.2%	<0.1%	0.2%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.1%	0.3%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.0%	0.5%	0.9%	1.2%
15 Plastic Flower Pots	0.2%	0.1%	0.1%	0.2%
16 Other Recyclable Containers/Tubs	0.4%	0.3%	0.3%	0.5%
17 Film Plastic - Shopping Bags	1.0%	1.0%	0.7%	1.3%
18 Film Plastic - Other	5.5%	1.6%	5.0%	6.0%
19 Other Rigid Plastic	3.5%	1.6%	3.0%	4.0%
Total Plastic	12.8%			
ORGANIC				
20 Food Waste	22.9%	5.9%	21.1%	24.7%
21 Clothing/Linens/Textiles/Leather	4.4%	3.3%	3.3%	5.4%
22 Carpets/Rugs	0.8%	2.9%	<0.1%	1.7%
23 Rubber	0.2%	0.8%	<0.1%	0.4%
24 Tires	<0.1%	<0.1%	<0.1%	0.0%
25 Diapers & Sanitary Products	4.4%	5.0%	2.8%	5.9%
26 Fines	1.7%	3.1%	0.7%	2.7%
27 Miscellaneous Organics	7.6%	3.1%	6.6%	8.6%
Total Organic	41.9%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	2.8%	7.1%	0.6%	5.0%
WOOD WASTE				
29 Lumber/Pallets	0.5%	<0.1%	0.5%	0.6%
30 Other Wood	1.9%	4.5%	0.4%	3.3%
Total Wood Waste	2.4%			

TABLE 19: ANNUAL WEIGHTED WASTE COMPOSITION - SINGLE FAMILY MUNICIPAL (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.5%	0.5%	0.3%	0.7%
32 Other Ferrous	1.8%	2.8%	0.9%	2.7%
Total Ferrous Metal	2.3%			
NON-FERROUS METAL				
33 Aluminum Cans	0.3%	0.1%	0.3%	0.3%
34 Aluminum Tins/Foil	0.3%	0.1%	0.3%	0.3%
35 Other Aluminum	0.2%	0.3%	<0.1%	0.3%
36 Brass	<0.1%	<0.1%	<0.1%	0.1%
37 Copper	0.2%	0.4%	<0.1%	0.3%
38 Other Non-Ferrous	0.3%	1.1%	<0.1%	0.7%
Total Non-Ferrous Metal	1.3%			
GLASS				
39 Clear	1.1%	1.2%	0.8%	1.5%
40 Brown	0.3%	0.9%	<0.1%	0.5%
41 Green	0.6%	0.8%	0.3%	0.8%
42 Non-Container Glass	0.2%	0.5%	<0.1%	0.4%
Total Glass	2.2%			
INORGANIC				
43 Concrete/Brick/Rock	0.1%	1.2%	<0.1%	0.5%
44 Sheet Rock	0.7%	3.9%	<0.1%	1.9%
45 Latex Paint	<0.1%	<0.1%	<0.1%	0.1%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	2.4%	4.8%	1.0%	3.9%
48 Miscellaneous Inorganic	2.8%	5.3%	1.2%	4.5%
Total Inorganic	6.2%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	0.2%	<0.1%	0.1%
51 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	<0.1%	<0.1%	0.0%
53 Poisons	<0.1%	<0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	0.2%	0.3%	0.1%	0.3%
56 Fuel/Lubricants/Auto	<0.1%	<0.1%	<0.1%	0.0%
57 HW Containers	<0.1%	0.3%	<0.1%	0.1%
58 Other Hazardous	<0.1%	<0.1%	<0.1%	0.0%
Total Hazardous	0.4%			
TOTALS	100.0%			

Note: Composition based on 40 samples.

Table 20. Annual Weighted Waste Composition – Multi-Family

Material Components	Mean Compos ition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	3.1%	2.0%	2.5%	3.7%
2 Corrugated Cardboard	2.6%	2.0%	2.0%	3.2%
3 Magazines	1.9%	1.6%	1.4%	2.4%
4 Paperboard	2.4%	1.2%	2.0%	2.7%
5 Aseptic/Poly-coated	0.4%	0.3%	0.3%	0.5%
6 Office Paper	1.9%	1.6%	1.4%	2.4%
7 Books	0.3%	0.4%	0.1%	0.4%
8 Other Recyclable Paper	3.0%	3.4%	1.9%	4.1%
9 Non-Recyclable Paper	7.4%	5.0%	5.9%	9.0%
Total Paper		22.8%		
PLASTIC				
10 PET #1 Bottles	1.7%	0.7%	1.5%	1.9%
11 HDPE #2 Natural Bottles	0.5%	0.7%	0.3%	0.7%
12 HDPE #2 Pigmented Bottles	0.5%	0.4%	0.4%	0.7%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	0.9%	0.4%	0.7%	1.0%
15 Plastic Flower Pots	<0.1%	<0.1%	<0.1%	0.0%
16 Other Recyclable Containers/Tubs	0.6%	1.0%	0.3%	0.9%
17 Film Plastic - Shopping Bags	0.8%	0.5%	0.6%	0.9%
18 Film Plastic - Other	4.3%	2.9%	3.4%	5.2%
19 Other Rigid Plastic	4.4%	5.2%	2.8%	6.0%
Total Plastic		13.8%		
ORGANIC				
20 Food Waste	18.4%	9.0%	15.6%	21.2%
21 Clothing/Linens/Textiles/Leather	5.4%	4.7%	3.9%	6.9%
22 Carpets/Rugs	3.6%	4.8%	2.1%	5.1%
23 Rubber	<0.1%	0.2%	<0.1%	0.1%
24 Tires	0.2%	0.6%	<0.1%	0.4%
25 Diapers & Sanitary Products	3.8%	3.1%	2.8%	4.8%
26 Fines	1.3%	1.8%	0.7%	1.8%
27 Miscellaneous Organics	6.9%	2.6%	6.1%	7.8%
Total Organic		39.6%		
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	1.9%	5.3%	0.2%	3.5%
WOOD WASTE				
29 Lumber/Pallets	2.2%	5.5%	0.5%	3.9%
30 Other Wood	2.6%	8.3%	<0.1%	5.2%
Total Wood Waste		4.8%		

TABLE 20: ANNUAL WEIGHTED WASTE COMPOSITION - MULTI-FAMILY (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

Material Components	Mean Compos ition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.8%	0.6%	0.6%	1.0%
32 Other Ferrous	2.2%	4.7%	0.7%	3.6%
Total Ferrous Metal	2.9%			
NON-FERROUS METAL				
33 Aluminum Cans	0.6%	0.5%	0.5%	0.8%
34 Aluminum Tins/Foil	0.3%	0.7%	0.1%	0.5%
35 Other Aluminum	<0.1%	0.1%	<0.1%	0.1%
36 Brass	<0.1%	<0.1%	<0.1%	0.0%
37 Copper	<0.1%	<0.1%	<0.1%	0.0%
38 Other Non-Ferrous	0.3%	1.2%	<0.1%	0.7%
Total Non-Ferrous Metal	1.3%			
GLASS				
39 Clear	2.0%	1.7%	1.5%	2.5%
40 Brown	0.8%	1.1%	0.5%	1.2%
41 Green	0.9%	1.0%	0.6%	1.2%
42 Non-Container Glass	0.5%	2.7%	<0.1%	1.3%
Total Glass	4.2%			
INORGANIC				
43 Concrete/Brick/Rock	0.7%	6.4%	<0.1%	2.7%
44 Sheet Rock	0.4%	0.4%	0.3%	0.5%
45 Latex Paint	<0.1%	<0.1%	<0.1%	0.0%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	3.8%	12.0%	<0.1%	7.5%
48 Miscellaneous Inorganic	2.9%	5.4%	1.2%	4.6%
Total Inorganic	7.8%			
HAZARDOUS				
49 Lead-Acid Batteries	0.2%	2.1%	<0.1%	0.9%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
52 Oil-based Paints/Thinners	<0.1%	<0.1%	<0.1%	0.0%
53 Poisons	<0.1%	0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	0.2%	0.7%	<0.1%	0.4%
56 Fuel/Lubricants/Auto	0.11%	1.0%	<0.1%	0.4%
57 HW Containers	0.1%	0.5%	<0.1%	0.3%
58 Other Hazardous	<0.1%	0.6%	<0.1%	0.3%
Total Hazardous	0.8%			
TOTALS	100.0%			

Note: Composition based on 39 samples.

Table 21. Annual Weighted Waste Composition – Non-Residential

Material Components	Mean Compos ition	Standard Deviation	95% Confidence Lim its	
			Lower	Upper
PAPER				
1 Newspaper/Newsprint Catalogs	2.6%	4.6%	1.4%	3.7%
2 Corrugated Cardboard	4.0%	3.8%	3.0%	4.9%
3 Magazines	1.5%	2.9%	0.8%	2.3%
4 Paperboard	1.7%	1.1%	1.5%	2.0%
5 Aseptic/Poly-coated	0.2%	0.2%	0.2%	0.3%
6 Office Paper	4.1%	2.6%	3.4%	4.7%
7 Books	0.7%	3.8%	<0.1%	1.7%
8 Other Recyclable Paper	4.1%	4.2%	3.0%	5.1%
9 Non-Recyclable Paper	10.4%	4.7%	9.2%	11.6%
Total Paper	29.3%			
PLASTIC				
10 PET #1 Bottles	1.5%	0.9%	1.2%	1.7%
11 HDPE #2 Natural Bottles	0.3%	0.3%	0.3%	0.4%
12 HDPE #2 Pigmented Bottles	0.2%	0.2%	0.1%	0.2%
13 #3-#7 Plastic Bottles	<0.1%	0.2%	<0.1%	0.1%
14 Polystyrene	1.4%	1.1%	1.2%	1.7%
15 Plastic Flower Pots	<0.1%	<0.1%	<0.1%	0.0%
16 Other Recyclable Containers/Tubs	0.6%	1.1%	0.4%	0.9%
17 Film Plastic - Shopping Bags	0.3%	0.5%	0.2%	0.5%
18 Film Plastic - Other	6.5%	3.0%	5.7%	7.3%
19 Other Rigid Plastic	3.7%	2.2%	3.1%	4.2%
Total Plastic	14.7%			
ORGANIC				
20 Food Waste	18.1%	15.9%	14.1%	22.2%
21 Clothing/Linens/Textiles/Leather	2.9%	7.6%	1.0%	4.9%
22 Carpets/Rugs	3.4%	16.9%	<0.1%	7.7%
23 Rubber	0.4%	0.4%	0.3%	0.5%
24 Tires	0.6%	4.8%	<0.1%	1.8%
25 Diapers & Sanitary Products	0.8%	1.4%	0.4%	1.2%
26 Fines	1.2%	1.2%	0.9%	1.5%
27 Miscellaneous Organics	6.1%	3.3%	5.2%	6.9%
Total Organic	33.6%			
YARD WASTE				
28 Grass/Leaves/Brush/Pruning	3.0%	9.3%	0.6%	5.4%
WOOD WASTE				
29 Lumber/Pallets	4.4%	16.5%	0.2%	8.6%
30 Other Wood	2.4%	7.2%	0.6%	4.3%
Total Wood Waste	6.8%			

TABLE 21: ANNUAL WEIGHTED WASTE COMPOSITION - NONRESIDENTIAL (continued)
MONTGOMERY COUNTY WASTE CHARACTERIZATION STUDY - FALL 2008/SPRING 2009

FERROUS METAL				
31 Ferrous/Bi-metal Cans	0.7%	1.1%	0.4%	1.0%
32 Other Ferrous	2.0%	3.9%	1.0%	3.0%
Total Ferrous Metal	2.7%			
NON-FERROUS METAL				
33 Aluminum Cans	0.6%	1.2%	0.2%	0.9%
34 Aluminum Tins/Foil	0.4%	0.2%	0.3%	0.4%
35 Other Aluminum	0.1%	0.6%	<0.1%	0.3%
36 Brass	<0.1%	<0.1%	<0.1%	0.0%
37 Copper	<0.1%	<0.1%	<0.1%	0.0%
38 Other Non-Ferrous	0.1%	0.1%	<0.1%	0.1%
Total Non-Ferrous Metal	1.2%			
GLASS				
39 Clear	1.0%	1.0%	0.7%	1.2%
40 Brown	1.0%	1.0%	0.7%	1.2%
41 Green	0.5%	1.2%	0.1%	0.8%
42 Non-Container Glass	0.2%	0.2%	<0.1%	0.2%
Total Glass	2.5%			
INORGANIC				
43 Concrete/Brick/Rock	0.4%	2.3%	<0.1%	1.0%
44 Sheet Rock	<0.1%	0.3%	<0.1%	0.2%
45 Latex Paint	<0.1%	<0.1%	<0.1%	0.1%
46 Fluorescent Lamps	<0.1%	<0.1%	<0.1%	0.0%
47 Electronics	1.3%	2.8%	0.6%	2.1%
48 Miscellaneous Inorganic	1.3%	0.9%	1.1%	1.6%
Total Inorganic	3.3%			
HAZARDOUS				
49 Lead-Acid Batteries	<0.1%	0.1%	<0.1%	0.0%
50 Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	0.0%
51 Other Batteries	<0.1%	<0.1%	<0.1%	0.0%
52 Oil-based Paints/Thinners	<0.1%	<0.1%	<0.1%	0.1%
53 Poisons	<0.1%	<0.1%	<0.1%	0.0%
54 Corrosives/Solvents	<0.1%	<0.1%	<0.1%	0.0%
55 Medical	2.7%	6.4%	1.0%	4.3%
56 Fuel/Lubricants/Auto	<0.1%	0.5%	<0.1%	0.2%
57 HW Containers	<0.1%	<0.1%	<0.1%	0.0%
58 Other Hazardous	<0.1%	<0.1%	<0.1%	0.0%
Total Hazardous	2.8%			
TOTALS	100.0%			

Note: Composition based on 59 samples.

6 RECOMMENDATIONS

SINGLE FAMILY RESIDENTIAL

As discussed earlier in this report, food waste comprises the largest proportion of the waste stream for single family residences, which includes Subdistrict A, Subdistrict B and Municipal Residential. Food waste also represents a waste stream material component that is recyclable through composting. Because food waste represents such a large portion of the waste stream, many municipal governments have instituted pilot food waste collection and composting programs within their jurisdiction.

One major challenge in making food waste recycling programs successful is the spatial requirements needed to compost food waste and then store the material long enough to cure into a final product that can be used. However, because food waste comprises a significant portion of the County's waste stream, it makes sense to revisit program options that could be implemented to target this material for recycling. SCS recommends that the County conduct a food waste composting feasibility study to evaluate the options and potential for establishing such a program in the County. Particular issues a feasibility study should address include food types accepted, accessibility of composting facility or the possibility of establishing a new one, program costs and the opportunity for integrating food waste collection with collection of yard debris. Residential food waste collection and composting programs are gaining momentum in the United States, especially on the West Coast, as municipal governments look to non-traditional waste materials and streams in an effort to significantly boost the amount of materials they divert from landfills. Some examples of pilot and existing residential food waste collection programs the County may consider include the following:

- 1) Regional District of Nanaimo (British Columbia) – www.rdnfoodwaste.ca.
- 2) City of San Francisco (California) – www.sfrecycling.com
- 3) King County (Washington) - <http://your.kingcounty.gov/solidwaste/garbage-recycling/food-collection.asp>.
- 4) City of Seattle (Washington) – www.seattle.gov

Another recyclable material that comprises a significant proportion of the County's waste stream is "other recyclable paper" – making up from 3.5 percent to nearly five percent of the waste stream. This material typically consists of unwanted mail, envelopes, brochures and flyers. This recyclable material is oftentimes difficult to capture because it tends to encompass many different types of materials in many different shapes and sizes. For these reasons educating the public of the recyclability of these materials can be quite the challenge. Many municipal governments have become creative in educating the public on the opportunities available to recycle unwanted mail, envelopes and "other" paper in order to capture more of these materials in the waste stream. Links to some useful public education outreach materials for this material type include:

- 1) New York Department of Sanitation:
http://www.nyc.gov/html/nycwasteless/html/at_home/tips_home_junkmail.shtml
- 2) California Integrated Waste Management Board:
<http://www.ciwmb.ca.gov/Lglibrary/Outreach/default.htm>

Newspaper/newsprint catalogues also represent an opportunity for the County to expand its recycling efforts, especially for the Single Family Municipal generating sector where newsprint makes up nearly five percent of the waste stream. The following links provide resources that may help Montgomery County increase newspaper/newsprint recycling.

- 1) Onondaga County Resource Recovery Agency – www.ocrra.org
- 2) Earth 911 - <http://earth911.com/paper/paper-recycling-education-resources/>
- 3) American Forest and Paper Association – www.paperrecycles.org
- 4) U.S Environmental Protection Agency -
<http://www.epa.gov/osw/conserve/materials/paper/audiences/coordinators.htm>.

MULTI-FAMILY RESIDENCES

Multi-Family Residences are very challenging properties to institute and maintain effective recycling programs for a number of reasons. First of all these properties tend to have transient populations. This requires more targeted and frequent education programs so residents know of recycling program availability and what materials are accepted for recycling. In addition, residents' access to convenient recycling facilities is extremely important and oftentimes Multi-Family Residences are not designed to make it convenient for residents to recycle.

Residents of multi-family units tend to be younger people who are of college age or in their 20s and 30s. As such, marketing multi-family recycling programs using traditional public education methods such as print and news media may not be that effective. One way the City of Los Angeles has overcome this challenge to reaching out to younger residents of multi-family units is by establishing a Facebook page where residents can become a “Fan” of the City of Los Angeles Multi-Family Residential Recycling Program. On this page, residents can find information on how to recycle in their unit, view pictures of the types of materials accepted for recycling and contact the City if there are any questions on the multi-family recycling program. Since Montgomery County has established a list of core materials that must be recycled at all multi-family residences, the County may wish to consider establishing a Facebook page of its own to educate multi-family unit residents in the County of what can and cannot be recycled. Access to the City of Los Angeles – Multi-Family Residential Recycling Program Facebook page is available at www.facebook.com. Currently there are over 400 people that are listed as being a “Fan” of this program. Other links to successful multi-family recycling program educational materials include:

- 1) METRO Portland (Oregon) – www.oregonmetro.gov

- 2) City of Fort Collins (Colorado) – www.fcgov.com

NON-RESIDENTIAL

Non-Residential waste represents a significant portion of the Montgomery County waste stream. Although the County has a well established and successful non-residential recycling program in place, there are material components that could further be targeted for recycling. In comparison to the residential and multi-family waste generating sectors, the proportion of the non-residential waste stream that consists of corrugated cardboard and office paper are significantly higher – approximately four percent each respectively. Cardboard is a big and bulky material that is usually generated in large quantities. Office paper is also commonly generated in most businesses. However, capturing these materials from the non-residential waste stream can be challenging especially when there is a significant number of small businesses, especially restaurants, as there are in Montgomery County. Although required to recycle, many of these businesses do not produce a significant amount of cardboard and office paper and as such these materials are disposed of in the trash.

In order to address the challenge of recycling at small businesses the County should continue to facilitate cooperatives among small businesses in a geographical area to consolidate recyclable materials generated to make it easier and more profitable for the materials to be collected. The County has an extensive website that serves as a good resource for information on recycling. SCS suggests devoting a portion of the website to promoting and explaining the small business cooperative program that exists in the County in order to expand its effectiveness and increase small business participation in the County's recycling program.

7 LABORATORY ANALYSIS

As part of this study, SCS contracted with Test America Laboratories to perform the chemical analysis of targeted waste samples. The results of the laboratory analysis, including the waste samples tested and the content tested for, are outlined in Table 17.

Table 22. Laboratory Analysis Results

Sample Material	Content Analysis	Results Fall 2008	Results Spring 2009	Units	Test Method
Recyclable Paper	Ash	28	11	%	U.S. EPA Standard Method 2540G
Recyclable Paper	Chlorine	--	0.095	%	U.S. EPA Standard Waste 5050
Food Waste – Residential	Chlorine	0.71	0.067	%	U.S. EPA Standard Waste 5050
Food Waste – Non-Residential	Chlorine	0.69	0.040	%	U.S. EPA Standard Waste 5050
Plastic – Recyclable	Total Organic Carbon	1,010,000	1,050,000	mg/Kg dry	U.S. EPA Standard Waste 846 9060M
Plastic – Other	Total Organic Carbon	898,000	1,100,000	mg/Kg dry	U.S. EPA Standard Waste 846 9060M

Each test was carried out according to the appropriate U.S. EPA test method. The fall samples were received into the laboratory at a temperature of 12° C while the spring samples were received into the laboratory at a temperature of 21° C. The reported results were obtained in compliance with 2003 National Environmental Laboratory Accreditation Conference standards. The analysis for chlorine and ash were conducted at Test America's laboratory in Watertown, Wisconsin, while the total organic carbon analysis was conducted at the Test America Laboratory in Nashville, Tennessee.